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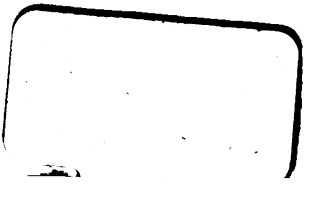

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Original and Selected Papers.

LABORATORY NOTES.

BY H. H. CROFT,

Professor of Chemistry, University College, Toronto.

Phosphomolybdic acid has long been used as a test for alkaloids. Phosphotungstic acid has also been recommended for the same purpose, and recently Scheibler has called attention to two new acids prepared by him, the formulæ of which seem somewhat doubtful, but which are excellent tests for alkaloids. The writer has made a few experiments with a solution prepared very easily, by boiling, for a few minutes, common tungstate of soda with half its weight of syrupy phosphoric acid. Quinine gives a distinct milkiness almost immediately in 10,000th dilution, and after 24 hours in 100,000th dilution. Morphine gives the reaction plainly enough in 10,000 dilution, but not in 100,000. Strychnine gives it quite plainly in 200,000th dilution, as stated by Scheibler. This strychine precipitate may be used for the chromic acid test, and the morphine

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and quinine compounds for the ordinary tests for those alkaloids. Bromine water, which can be prepared in a minute, is more handy than chlorine water, and answers just as well, or better, in conjunction with ammonia in the test for quinine; also in the ferrocyanide test. Fluckiger has found that it will detect one part of genuine in 20,000 of water. The ferrocyanide test (Vogel's) is not so delicate, detecting the alkaloid in 2500 parts of water.

ON INFUSION OF WILD CHERRY BARK.*

BY J. B. MOORE.

The formula of the U. S. Pharmacopœia for the infusion of wild cherry bark affords an unsatisfactory preparation.

The infusion, to be an efficient remedy, should be carefully made, and should represent the tonic as well as the sedative properties of the bark; and, since water extracts but a meagre portion of the bitter tonic principle of the drug, the infusion as made by the officinal process can be said to faithfully represent only the sedative properties. Moreover, when made with water alone as the menstruum, the infusion is a very unstable preparation, liable to spoil, in warm weather especially, in a very short time.

Glycerin is one of the best solvents for the bitter principle of wild cherry bark that we have, and when associated with water forms a menstruum perfectly adapted for extracting the entire medicinal virtues of the bark; and it is with such a menstruum that I propose making the infusion, and would offer the following formula and process, which after repeated trials has proved perfectly satisfactory:

℞	Powd. Wild Cherry Bark, No. 60,	ʒss, troy.
	Glycerin,	f ʒij.
	Water, temperature 86°.	
	Water,	each a sufficient quantity.

Moisten the bark with six fluid drachms of water, at the temperature of 86°. Allow the mixture to stand for two hours in an air-tight vessel, at about the same temperature. Then pack it firmly in a glass percolator. Mix the glycerin with ten fluid ounces of water at the temperature of 86°, and gradually pour the mixture upon the bark, and when it has all passed from the surface continue the percolation with water until one pint of infusion is obtained.

* From the American Journal of Pharmacy.

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In the above formula I have refrained from mixing glycerin with that portion of the water with which the bark is moistened, lest it might possibly interfere with or retard its reaction upon the bark.

As prepared by the above formula, the infusion is much darker in color than that as made by the officinal process, and much more bitter; the taste of which, however, is modified and rendered more agreeable by the glycerin it contains. The hydrocyanic acid odor is also strongly marked in it.

I think that the formula for this infusion might be still further improved by doubling the strength of the infusion, that is, using one troy ounce of bark to the pint of infusion instead of half a troy ounce as is now employed. I can see no possible objection to such a change, but can see many reasons why it should be made. It would greatly lessen the bulk of the dose, which is a large draught for a delicate person to swallow. The dose may then be reduced from two or three fluid ounces to two or three tablespoonfuls.

In the course of my experiments to test the relative merits of the above formula and process with those of the officinal, I made upon several occasions a sample of the infusion as directed in the above formula, also one by the same process, but doubling the quantity of the bark, and another strictly in accordance with the officinal formula.

The sample on each occasion made by the above formula kept, without apparent change in sensible properties, for about ten days, with the exception of very slight turbidity and a little deposit of resinous or other insoluble matter, which was of no consequence. The characteristic hydrocyanic acid odor, however, remained apparently undiminished for that period, after which I could perceive a gradual loss of this odor, with an increased cloudiness and deposit; while the sample made by the same formula, with double the proportion of the bark (one troy ounce instead of half a troy ounce to the pint), kept without visible change, beyond a slight cloudiness and a little deposit, for about sixteen days, retaining its characteristic odor and taste but very slightly diminished for that time. But the sample on each occasion, which was made in strict conformity to the officinal formula, with water alone as the menstruum, exhibited in a very short time a cloudiness, which rapidly increased, and the hydrocyanic odor was entirely lost in four or five days, while the infusion became entirely spoiled and unfit for use in less than a week.

These samples were all kept in the same situation in my store room, at a temperature ranging from 60° to 70°. These results show that there can be no question about the advantages in the use of glycerin in the preparation of this infusion, and also illustrate the advantages of increasing the strength of the infusion, as it seems to give increased stability to the preparation.

The glycerin not only contributes to its preservation, but also

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forms a better and more potent menstruum for the solution of the virtues of the bark, and affords a much more active and efficient preparation. The sweet taste of the glycerin also serves to conceal in a measure the bitterness of the infusion, and renders it more agreeable to the taste. Glycerin itself, possessing alterative, nutrient, and demulcent properties, is useful in almost all cases in which the infusion of wild cherry bark would be employed; while in no case can there be any possible objection to its use.

It is a fact well known to all observing pharmacists that the proportion of hydrocyanic acid in all preparations of wild cherry bark gradually diminishes with time, and sooner or later entirely disappears, especially if the medicine is exposed to the light.

This fact alone gives, I think, additional importance to the infusion as a therapeutic agent, which, when carefully and properly made, furnishes a preparation embodying all the medicinal virtues of the bark in a fresh or nascent state, and in an eligible form for administration; and, as the proportion of the menstruum to the bark is so large, it will always, with ordinary care, insure its perfect exhaustion of all that is medicinally desirable.

I am surprised that physicians do not more frequently avail themselves of the use of this preparation; I presume the cause of its being so seldom prescribed is owing to the liability of the officinal infusion to spoil quickly, and the prevailing impression of its inefficacy. If, however, physicians can have this preparation made so that it will keep, and retain its medicinal properties unimpaired for two or three weeks, and prepared in such a manner that it will fully represent the entire active properties of the bark, I have no doubt that it would become a more popular remedy.

I have directed in the above process a two hours' preliminary maceration, instead of an hour as in the officinal. This may, even with advantage, be prolonged to five or six hours, when circumstances will permit, so time will be given for the necessary reactions which develop the sedative properties of the bark to become more complete.

The temperature of the water with which the bark is moistened preparatory to maceration should never be below 86° to 90°, and the maceration should be conducted at about the same temperature, as this temperature serves to promote the reactions referred to above. Yet care must be exercised not to allow the temperature to much exceed that point, otherwise there will be more or less loss of hydrocyanic acid. Attention to this point is of like importance, also, in the manufacture of all preparations of wild cherry bark where it is desirable to secure its full sedative power.

Especially is this necessary in cold weather. In summer the water is usually warm enough, and the temperature of the atmosphere such as to render the resort to artificial warmth unnecessary.

Some pharmacists, when making the syrup of wild cherry bark,

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after moistening the bark with water place it in the cellar to macerate; but this should not be done as most cellars are too cold at any season for this purpose. It is also necessary that the maceration be conducted in an air-tight vessel, otherwise the hydrocyanic acid will escape almost as fast as it is generated. There is another precaution, also, that it is well to observe in this matter, and that is to pack the bark rather firmly into the vessel in which it is macerated, as this will tend to confine the acid and prevent its waste.

There are many cases of disease in the treatment of which the physician may wish to combine the properties of tar with those of wild cherry bark; if so, an elegant and valuable combination of this kind may be formed in the following manner:

℞ Tar, pure - - - - - - 1 pint.
Infusion of Wild Cherry Bark - - 4 pints.

To the infusion, in a suitable bottle, or other air-tight vessel, add the tar. Set it aside to macerate for two or three days. Stir the mixture well with a stick, and shake it vigorously frequently during the maceration. Then filter through paper.

The *stirring* directed in the preparation of this compound infusion is an important part of the process, as it breaks up the tar and thus presents a larger surface of it to the action of the solvent, which enables the liquid to more thoroughly and more quickly exhaust the tar of all that is soluble in it; whereas, if the mixture is simply shaken the tar will often remain in an impermeable mass, the interior of which is entirely inaccessible to the menstruum. This same treatment could, I think, be adopted with advantage in making the officinal "Infusum Picis Liquidæ."

When prepared as above directed and filtered, this infusion is quite a handsome preparation, and to those who have not an aversion to the taste of tar it is not an unpleasant one.

Glycerin being a good solvent of the medicinal virtues of tar, this compound infusion possesses the properties of the latter in a high degree, and in my opinion it is superior medicinally to the "Wine of Tar," and may be substituted for it with advantage in almost all pectoral diseases.

It will be found an excellent remedy in chronic pectoral and bronchial affections, and may often be used also with good effects in the treatment of certain diseases of the kidneys and bladder. The physician may at pleasure combine with it any of the usual expectorant, diuretic, anodyne or diaphoretic medicines.

It may be administered in the dose of from one to two tablespoonfuls every two or three hours, as required.

This infusion is not so liable to spoil as the simple infusion of wild cherry bark. Being impregnated with the antiseptic properties of tar, it will keep for a long time unchanged, if kept in a cool, dark place.

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In the late revised edition of the U. S. Pharmacopœia, I observe that the Committee of Revision have given some attention to the infusion of wild cherry bark, and have substituted a "fine powder" for the "moderately coarse" one employed in the edition of 1860. This was a judicious change, and I regret that they did not make the same alteration in the formula for the syrup of wild cherry bark. In fact, a "very fine" powder for that preparation would not be at all too fine; while a coarser powder than No. 60 will not yield a satisfactory syrup; for, no matter how firmly packed, the percolation, when a coarser powder than "No. 60" is used, proceeds too rapidly, and the bark is in consequence but imperfectly exhausted.

PHILADELPHIA, March, 1873.

LABORATORY NOTE ON THE RED AND GREEN IODIDES OF MERCURY.*

BY F. R. WILLIAMS.

Nearly 10 years ago I was frequently engaged in the manufacture of considerable quantities of red and green iodides of mercury. At first I was in the habit of washing the green iodide with alcohol to purify it from adhering red iodide, as is usually done. But on one occasion, by reason of a misunderstanding, the proportion of iodine was considerably increased, and therefore the union between it and the mercury was almost instantaneous and very violent, so much so that the whole material was for a moment in a complete state of fusion, the evolution of heat being sufficient to fill the spacious apartment with dense violet vapors. The proportion of the materials was then rectified by supplying the deficiency of mercury, and the mixture was now thoroughly triturated. The resulting compound did not have the deep olive green color that this preparation usually possessed; but on the contrary, it was of buff or yellowish green cast. Alcohol did not change its color, and therefore I presumed that the intermediate iodide had been largely formed, or that the mixture contained an extraordinary amount of the red iodide. The washing with alcohol was then continued, and the filtrate at intervals examined by dropping it into water, the production of a precipitate indicating the presence of red iodide. Formation of turbidity remaining undiminished, I was led to believe that alcohol could not purify this lot. Very little satisfaction was obtained by referring to authorities, and at last I concluded that as the Edinburgh process for preparing red iodide of mercury consisted

* From the Chicago Pharmacist.

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in part by crystallizing it from a hot solution of chloride of sodium, this might also answer for purifying the green iodide, consequently I boiled the refractory mixture with a strong solution of chloride of sodium and succeeded admirably in removing the poisonous red compound. After this I never employed alcohol, but always washed the green iodide with a hot solution of chloride of sodium for purification. I found this to be the most economical, expeditious, convenient, and thoroughly efficient operation that could possibly be devised.

In the manner of preparing the red iodide I resorted almost at the outset to a very important modification of the ordinary way. The unnecessarily great amount of water employed is a disagreeable feature when the process is applied in the production of large quantities. Knowing that red iodide of mercury is only sparingly soluble in a strong solution of hydrochloride of ammonia, I introduced this latter salt into the formula, so as to obtain a very concentrated solution of corrosive sublimate, and in this manner get rid of an enormous quantity of water. The strong solution of the chloride of mercury made with the aid of the ammonia salt is mixed with a similarly concentrated solution of iodide of potassium and the heavy precipitate of the red iodide subsides rapidly. Pints of water accomplish here what formerly gallons only could effect. My process is given below:

℔ Corrosive Chloride of Mercury, 4 parts.
Iodide of potassium - - 5 "
Hydrochloride of Ammonia 2 "
Water, a sufficient quantity.

If not already in powder, pulverize the ammonia salt coarsely. Then put the mercury chloride into a convenient wedgewood mortar and crush it (this can be easily and quickly done); add to it the hydrochloride of ammonia, and pour on three or four parts of water, triturating until the salts have dissolved. Now dissolve the iodide of potassium in five or six parts of water, and pour into it the first solution, collect the precipitate on a strong filter, wash it thoroughly with water and dry it in the open air.

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MUSK.*

Three kinds of musk find their way into the English market, the first of which, Kabardeen, or Russian musk, comes to us from Siberia through Russia. It is of a very inferior quality, being poor in odour, and is said to be the produce of a different species from the Himalayan musk deer, called *Moschus Sibiricus*. The pods are large, and usually are to be depended on as to genuineness, which is much more than can be said for the pods we import in caddies from China. The Chinese musk generally is valued at from four to six times as much as the Russian, and in buying this very dear substance the purchaser would require to beware of bargaining for a pig in a poke. It is frequently adulterated with baked blood, dried liver, bark, pellets of lead, etc., to such an extent that only the smell of the original tenant remains in the pod. The perfumers further distinguish Assam musk from the Chinese or Tonquin musk, by its possession of a much more rank smell than that imported from China. Regarding the musk of the Western Himalayas, I find the following note in the catalogue of of the Agra Exhibition of 1867:—"The Simla musk balls, which are presented as complimentary nazars by hill chiefs, are an inferior kind, and do not command anything like the price of the genuine Thibet balls. About 100 musk bags are imported from Changthan *viâ* Yarkand, of which about forty go to Yarkand; the rest go to Kashmir and Jammu, and are taken by Yarkand pilgrims to Mecca, for sale in India or other Asiatic countries. They are produced in the north-west of Rodokh and Nepal, and valued at Le (in Kashmir) from seven to fifteen rupees, at Yarkand from twenty-one to twenty-six rupees. In former times, musk bags of the Dasht-i-Khuttan, or great Tartar Desert, were in high repute, and fetched at the least forty-two rupees; but all supply from that quarter has long ceased."

Among animal perfumes musk not only stands pre-eminent, but in many respects it is the most wonderful material nature places at the disposal of the perfumer, and it has in all times been the most highly prized among the oriental peoples who possessed or could purchase it. According to the author and prophet of the Mussulman faith, the floor of the seventh heaven, or paradise of the faithful, is composed of pure wheaten flour mixed with musk and saffron, and the black-eyed houris who will welcome the immortal braves to these realms of odoriferous bliss are themselves fashioned out of pure musk. So enchanting to the senses of the followers of the prophet is the odour of musk, that it is said there exist two mosques in the mortar of which an enormous quantity of pure musk was mixed up; and such is the penetrating and enduring odour of this substance, that probably the perfume will continue powerful

*Extract from a paper read before the North British Branch of the Pharm. Soc., by James Paton, Assistant Keeper, Museum of Science and Art, Edinburgh. Published in Pharm. Journal and Transactions.

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and persistent as long as the finger of time permits the walls to hold together.

Besides the *Moschus moschiferus*, which is practically the only source of musk in commerce, many other animals and even plants are possessed of a powerful musk odour. Among the creatures possessing the scent are the musk ox, *Ovibos moschatus*, of the northern regions; the musk rat of India, *Sorex myosurus*; the European musk rat, *Mygale moschata*; and of all other sources, the alligators and crocodiles of both hemispheres. This source of musk is well known and utilized in India, as an extract from the catalogue of the Madras Exhibition of 1855, speaking of the alligator in Travancore, will show. "Musk," it says, "is taken from the glands of the jaw, which is very fine if well prepared, and separated from the flesh, otherwise it will give a very bad smell." Among the articles exhibited by Egypt in the Paris Exhibition of 1867, there occurred the musk of the crocodile as one of the ingredients in Egyptian perfumery. Many insects are also powerfully pervaded with an odour of musk. Among plants possessing the odour there may be named the seeds of *Abelmoschus moschata*, and the *Mimulus moschatus*, an American importation common in nearly all gardens, and which has taken so kindly to many of our water-courses that the whole reach of many of our streams is yellow with them in July. The most powerful odour of musk is, however, contained in the Sumbul or musk-root, *Hyalolena Siverzovii*, an umbelliferous root which comes to us from Afghanistan.

GLYCERIN IN FLUID EXTRACTS.*

BY WILLIAM C. GILL.

Extracted from an Inaugural Essay.

Sixteen troyounces of valerian root, reduced to proper form, was exhausted and made into fluid extract in the usual manner; the result was a clear reddish-brown preparation, odor and taste strong of valerian, and indicating a good extract. Another sixteen troyounces was treated, after Mr. Campbell's process, with a menstruum consisting of alcohol, three parts; glycerin, one part. The fluid extract obtained was of a very dark reddish-brown color, with the characteristic odor and taste, but to all outward appearance much stronger than the preceding. Both preparations were labelled, dated and set aside. At the expiration of five weeks the fluid extract containing glycerin had changed to a muddy liquid, very unsightly and with considerable precipitate; the other, on the contrary, remained

*From the American Journal of Pharmacy.

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clear, with but a very slight precipitate. The glycerin preparation was then filtered; the filtered liquid again presenting a beautiful clear appearance, and seeming to have lost but little of its strength, and by many would have been pronounced the best preparation of the two. In this instance the glycerin served merely to dissolve the coloring matter (which it was unable afterwards to hold up), and thus placed the preparation in a false light, giving rise to what by a vulgar expression is called "strong" simply on account of its depth of color.

Similar experiments were made with buchu, cubebs, lupulin and ginger. In the first three the result was very nearly the same as with the valerian, namely, a strong-looking preparation, but one which in each instance precipitated after standing some time. In fact, with the cubebs and lupulin it was apparent that glycerin was not at all suitable, while the buchu yielded, instead of the rich green color noticed in the alcoholic fluid extract, a preparation having a brownish hue. The fluid extract of ginger made with the addition of glycerin was, however, superior to that simply made with alcohol, not only presenting a much nicer appearance, and proving on dilution to be equally as strong, but remaining permanent.

While performing these few experiments with the above well-known drugs, an order was received for fluid extract of poke root. Having previously used diluted alcohol as a menstruum, and with considerable success, we thought to improve on the same by addition of glycerin. A dark reddish-brown preparation was the result, coming up fully to our expectations; and, feeiing perfectly satisfied, we placed what remained on hand after filling the order, on a shelf. On going to the bottle some three weeks after we found, on examination, the extract had gelatinized, and was in a semi-solid condition. Since then we have noticed a similar change in several other fluid extracts which were stable before glycerin was used in preparing them, yellow dock, golden seal, and elecampane being among the number.

In making the above statements we do not wish to condemn the use of glycerin in fluid extracts; on the contrary, we rather approve of it; but its indiscriminate use, as recommended by many, we do certainly disapprove of. In many cases the use of glycerin seems specially called for. In the fluid extract of senega it appears to be the only preservative; for, no matter what menstruum we use, if glycerin is omitted the preparation will precipitate, while if this liquid is used in the proportion of one-fourth to the usual menstruum, a fluid extract is obtained which will remain permanent, with but very slight precipitation, for an indefinite period.

The above observations are more of a practical than experimental nature, and are, perhaps, a little at variance with the ideas generally published; though adding nothing new to our knowledge of glycerin, they show that we must be guarded in its use, and carefully study the composition of the drug before using it as a menstruum.

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NOTE ON AQUÆ MEDICATÆ.*

BY F. W. REINHOLD, JR.

The notion that medicated waters should be made by distillation has still a strong hold in the views of many pharmacists. Recently a modification of the distillatory process has been advanced, and that is, to distil the volatile oils with water, instead of the herbs, barks, etc. If the volatile oil is pure there is certainly an advantage in this change. Defenders of the methods by distillation would lead us to believe that medicated waters, particularly those made from fresh herbs, are so very superior in the characteristic flavor, strength, and general permanence. But the best authorities on this question rather confirm the popular supposition that such distilled products, on the contrary, possess a very disagreeable herbaceous rankness, the peculiar leaf-odor and taste, which is anything but desirable. Waters of this kind must always have age, during which time the rankness disappears, leaving them a natural and pleasant fragrance. Medicated waters prepared from dried but not too old herbs, yield pleasanter products than the fresh. Many volatile oils, when freshly distilled, have the same peculiar rankness, which disappears after some time. But the same volatile oil may later again become rank through oxidation, if not properly protected against atmospheric action. There is no use for agitators in favor of distillations to try so hard in widening the sphere of this process. Pharmacists generally are not so much in love with the retort business as to extend its utility to the medication of waters. Medicated waters are prescribed so largely and so indiscriminately, that many pharmacists would have to keep a special medicating laboratory of stills in constant action for their required supply. Besides waters thus prepared would entail extra and unnecessary expense on the consumer, without a really intrinsic value in return. The plea that the distilled waters are far the strongest is vain. Water will only dissolve a certain amount of volatile oil to become saturated, and therefore no manipulation will impregnate or supercharge it with more. Water can be easily saturated with any particular volatile oil without taking refuge in the retort.

So-called concentrated waters are also used, especially in England. These waters are said to be stronger than the officinal. They are sold to retail pharmacists for the purpose of making the ordinary medicated waters. But such traffic, in its very nature, is fraudulent in the last degree. When the officinal waters are already assumed to be saturated, how, in the name of reason, can simple water then dissolve sixteen times its saturating proportion of volatile oil? But the case is made plain when we know that diluted alcohol will just

* From the Chicago Pharmacist.

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do this very thing. Most volatile oils will form a perfect or nearly perfect solution with diluted alcohol, or a mixture of equal parts of the strongest alcohol and water, in the proportion of four mimims, or eight drops, to the fluid ounce. This solution, when poured into about 15 fluid ounces of water, will form a clear solution in most cases. A pint of this kind of medicated water will then contain adtionally half a fluid ounce of alcohol, equal to about three per cent.

The best way to make these concentrated waters is to dissolve the oil in half the alcohol and mix the remainder of the alcohol with twice its volume of water, and then pour into this the first solution, with constant stirring. After standing a few hours the solution is filtered, if desirable, through magnesia alba.

To make concentrated camphor water 16 grains of camphor are dissolved in 2 drachms of alcohol, and poured with rapid stirring into a mixture of two fluid drachms of strongest alcohol and half an ounce of water. This makes a clear solution. On pouring this into 15 fluid ounces of water it also makes a clear solution on shaking. The water then contains one grain of camphor to the fluid ounce, which makes it rather stronger in camphor than usual. The reason is that water containing even so little as three per cent. of alcohol is a better solvent than pure water. This also holds good in regard to volatile oils. Medicated waters containing a trace of alcohol are not so apt to become turbid, in contact with saline substances, which is a very annoying feature, particularly with camphor water, which throws out abundance of camphor and assumes an unpleasant appearance when certain salts are dissolved in it. For the prevention of this precipitation the presence of a little alcohol is especially good.

I believe, however, that the best way after all to make the medicated waters, is to prepare them by simple maceration. That is, to shake the volatile oil with the water, then set it aside for a day or two, and shake the mixture occasionally, and finally filter. I find that this saturates the water completely and avoids the presence of magnesia and alcohol. The results I deem superior to the distilled waters, if care is taken to use pure and good oils. I find that the solubility of oils of bitter almond and gaultheria is far greater than that of the other volatile oils proper. The act of solution is almost instantaneous in each case, so that no time is required to arrive at complete saturation of the water. The oil of bitter almond seems to be the most soluble of the two.

One minim of volatile oil of bitter almond will dissolve perfectly and instantly in six fluid drachms of water, without the addition of alcohol or magnesia alba. According to this the originator of the officinal aqua amygdalæ amaræ did not immortalize himself much when he concocted a formula which employed a quantity of magnesia alba for no purpose at all, and then used only six minims of oil to 12 fluid ounces of water, when the same quantity of water

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would have completely dissolved 16 minims of oil without the aid of magnesia alba.

In making camphor water the camphor is first pulverised and then shaken with the water, similar to the manner of making the other waters. The camphor can be powdered, with the addition of a few drops of alcohol, but even this alcohol is not required, because the addition of the same amount of water will accomplish the purpose equally well.

CUPRO-AMMONIUM.*

Take a bottle half full of ammonia solution, of gravity .880, immerse some shreds of copper, and notice the result. Almost immediately the solution acquires a tinge of blue, which tinge can be referred to a solution of a portion of the copper, the question being, by what is the metal dissolved.

Air, or rather the oxygen of air, is necessary to the result, as may be demonstrated by absolutely filling a bottle with the solution of ammonia *plus* the copper shreds, instead of partially filling it, when no solution of the metal will issue.

It will be proper here to remark that, although ammonia will first precipitate hydrated oxide of copper from any ordinary copper salt, and an excess of ammonia will dissolve the oxide, yielding a blue solution, yet the latter is not the cupro-ammonium to which our remarks will refer, having none of the properties of that fluid save identity of color.

Although the incidence of chemical action is made evident to the eye at once, yet the maximum degree of chemical action will only be arrived at after the lapse of about six weeks, and not even then except care has been taken to remove the stopper of the bottle, from time to time shaking the contents—still better, pouring the contents from one bottle to another—the general result arrived at being to give air. In practice on the large scale, the same result is more speedily attained by means of an air force-pump. After the lapse of the requisite time, the solution will be found to have acquired a deep blue color, and also certain very curious properties, amongst others that of dissolving a number of things usually regarded as insoluble. For example, cupro-ammonium so rapidly dissolves silk that, when in good condition, a yard length of white Persian or sarsanet, if plunged into the solvent, dissappears as rapidly as a lump of sugar in a tumbler of hot water. Lignin or cellulose dissolves also with great facility, but with a facility not quite equal to silk. Of all forms of lignin, perhaps, white blotting

*From the Engineer.

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paper dissolves most readily, but there is no form or variety of lignin which it will not dissolve under the condition of adequate time.

Taking advantage of this solvent property of the agent, a curious series of operations become possible. Paper, linen, wood, any sort or varieties of lignin, may easily be agglutinized together, without the intervention of any other cement than its own substance brought to the state of solution by cupro-ammonium. A curious fact, too, is that, when surfaces of paper or other ligneous materials have been thus agglutinated, the copper which they hold may be extracted by a weak acid, leaving the paper or other lignin pure and white, but not in any way interfering with the adhesion of one layer of lignin material to another.

The chemical enquirer need not be told that the designation cupro-ammonium is only empirical. What the exact formularization of the substance may be, the name does not express, and is not intended to express. That the copper exists in a peculiar electro-chemical state not participated by ordinary copper salts is well demonstrated by difference of the action of the two on iron. For example, whereas sulphate of copper (blue vitriol), if dissolved and iron immersed in the solution, deposits copper on the iron at the expense of iron dissolved, the cupro-ammonium does nothing of the sort, but actually guards the very brightest of iron and steel against all chemical action so long as immersion is continued. This reminds us of a reply to a naval surgeon who has sent to us a letter in which he asks whether cupro ammonium would protect his instruments against rust, to which they are subject between decks. The answer is yes, cupro ammonium will infallibly do that; but, we are sorry to say, it will also dissolve all such parts of surgical instruments (*e. g.*, knife handles) as have ivory, wood, or bone entering into their composition.

PETROLEUM AND ITS PRODUCTS.

Professor Chandler recently made a report to the New York Board of Health which contains much interesting information in regard to the manufacture and safety, of the so-called coal oil. From a portion of this report, which was published in the *Druggists' Circular*, we make a few extracts.

The crude petroleum is first subjected to fractional distillation, the apparatus consisting of an iron still, connected with a coil or worm of wrought-iron pipe, which is submerged in a tank of water, for the purpose of cooling it. When the still has been filled with crude oil the fire is lighted beneath it, and soon the oil begins to boil. The first products of distillation are gases; at ordinary temperatures they pass through the coil and escape without being con-

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densed. By cooling the coil with ice or by compressing these gases by an air-pump into a strong receiver, very volatile liquids called "rhigolene" and "cymogeme" are obtained.

Soon the vapors begin to condense in the worm, and a stream of oil trickles from the far end of the coil into the receiving tank. The first oils obtained have a gravity of about 95° Beaumé; as the distillation proceeds the product becomes heavier, 90° B., 85° B., 80° B., 75° B., 70° B., and so on.

In most establishments it is customary to run the product into one tank till the gravity reaches 65° B. to 59° B.; the product, known as *crude naphtha*, being subsequently separated by redistillation into (1) *gasolene*, the lightest; (2) *naphtha;* (3) *benzine*. When the stream of oil runs from the coil with a gravity from 65° to 59° B., it is diverted into the *kerosene* tank and continues to run into this receiver till the gravity reaches about 38° B., or until the color deepens to a yellow. This second fraction is the burning oil or *kerosene*, and is subsequently purified by sulphuric acid and alkali.

After taking off the burning oil, the stream is directed to the *paraffine oil* tanks, and continues to run there till nothing remains in the still save coke. The last products have a gravity of about 25° B.

This oil is chilled to crystallize the paraffine, and is then folded in cloths and exposed to pressure to squeeze out the oil. The solid paraffine is purified by repeatedly melting it in naphtha, chilling, and pressing; the oil separated from it is purified with sulphuric acid and alkali and used for lubricating purposes.

When very large stills are employed, of a capacity from one thousand to thirty-five hundred barrels, the distillation is not continued till coke is formed; but is interrupted when there remains in the still a thick tarry residuum amounting to from five to ten per cent of the original oil. This residuum is afterwards distilled to coke in smaller stills.

By slow distillation in high stills the heavier oils are "cracked" into lighter oils, so that the refiner need not produce any heavy oil. In many of the largest establishments only three products are obtained from crude oil: 1. Crude naphtha. 2. Burning oil. 3. Residuum. The *burning oil* is deodorized and bleached for market with sulphuric acid and alkali; *crude naphtha* is sold for from 3 to 5 cents per gallon, and poured down the oil wells, nominally *to clean them*, but practically to be sold to the refiner again in the crude oil at 14 cents per gallon; or it is sold to be redistilled for gasolene, refined naphtha, and benzine. The well-owners are many of them dishonest enough to pour the nahptha into the crude oil tank. This adulteration averages fifteen per cent.. The residuum is sold to be distilled for paraffine and lubricating oil, or it is cracked in high stills, and the product put into the large stills with the crude oil. In this case no lubricating oil or paraffine is manufactured. This is the

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practice at Cleveland and Pittsburg. Some redistil the last ten per cent., the colored portions of the burning oil, with the crude oil.

Some place the crude petroleum in large stills and blow steam through it, and thus take off the crude naphtha, before the oil is run into the fire still.

Some manufacturers, who pride themselves upon the superior quality of their special brands of oil, separate certain portions of the distillate, and send them to market as unusually safe oils.

The "*Astral Oil*" is probably the oil which runs from about 54° to 44° B., in other words, the "heart" of the burning oil. As it does not contain the lighter portions of the ordinary oil, its flashing point is 125° F., or 25° above the standard of safety, although its average gravity is 49° B. The "*Mineral Sperm*"* is a heavy oil, which probably runs between 40° B. and 32° B., averaging 36° B. This is so heavy, and requires so high a temperature to volatilise it, that it does not evolve an inflammable vapor below 262° F., nor take fire below 300° F. Practically it is as safe as whale oil.

After the oil has been fractioned it is subjected to the action of sulphuric acid to remove a little color, but more particularly to *sweeten* it, *i.e.*, to remove the disagreeable odor which it still retains. About two per cent., by measure, of acid is poured into the oil, the mixture is thoroughly agitated, and, on standing, a dark, tarry sediment separates; this is removed, and the clear oil is then agitated with water, then with alkali, either caustic soda or ammonia. This neutralises the last traces of acid, and, after removal by water, leaves the oil "*sweet.*" Some of the more careful refiners then subject it to a somewhat elevated temperature to expel a small percentage of naphtha or benzine which it still contains, while a few subject it to redistillation.

Why most of the Kerosene in the market is unsafe.

The crude naphtha sells at from three to five cents per gallon, while the refined petroleum or kerosene sells for twenty to twenty-five cents. As great competition exists among the refiners, there is a strong inducement to turn the heavier portions of the naphtha into the kerosene tank, so as to get for it the price of kerosene. They change the direction of the stream from the coil of the still when it reaches 65° to 63° B., instead of waiting till it reaches 58°. Thus the inflammable volatile naphtha or benzine is allowed to run into the kerosene, rendering the whole highly dangerous. Dr. D. B. White, President of the Board of Health of New Orleans, found that, experimenting on an oil which flashed at 113 F., an addition of

* For the manufacture of this, the safest burning oil yet made from petroleum, see the *American Chemist* for May, page 404.

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One per cent. of naphtha caused it to flash at					103° F.
Two	"	"	"	"	92° F.
Five	"	"	"	"	83° F.
Ten	"	"	"	"	50° F.
Twenty	"	"	"	"	40° F.

After the addition of twenty per cent. of naphtha, the oil burned at 50° F.

It is, therefore, the cupidity of the refiner that leads him to run as much benzine as possible into the kerosene, regardless of the frightful consequences which result from the frequent explosions.

On every gallon of naphtha run into the kerosene tank there is a profit to the refiner of twenty cents, or on every per cent. of naphtha added to the kerosene a reduction of one-fifth cent per gallon in the cost of production, which, with kerosene at twenty-five cents per gallon, amounts to one and one-fourth per cent. For every gallon of naphtha sold as kerosene, the refiner can afford to throw away four gallons. Nothing is more desirable than the discovery of some use to which the naphtha can be put, which will make such a demand for it as to raise its value above that of kerosene, that it might be the interest of the refiner to separate *as much* instead of *as little* as possible. It must not be supposed that the specific gravity of the oil can be considered a safe index of its quality; on the contrary, the specific gravity gives very little idea of the quality, for while naphtha tends to render the oil lighter, the average gravity of good oil is maintained by the heavier oils present. A poor, dangerous oil may be heavier than a safe oil.

The *Astral Oil* illustrates this fact; while it does not flash below 125° F., its gravity is 49° B.

Ordinary kerosene flashes at 86° F., but has a gravity of 47° B.

THE USE OF NUT OIL IN PHARMACY, AND ESPECIALLY IN THE PREPARATION OF UNGUENTUM HYDRARGYRI NITRATIS.*

BY M. FALIERES.

In a brief review of former formulæ for the preparation of citrine ointment, the author calls attention to the large increase which has taken place in the relative proportion of the nitric acid to the mercury. The proportions indicated by Baumé, in 1785, were nitric acid 128 parts, mercury 96 parts, lard 1000 parts. The mercury has been gradually decreased until, in the Codex for 1866, where equal parts (500) of olive oil and lard are ordered, the nitric acid is

* 'Bull. des Travaux de la Societe de Pharmacie de Bordeaux,' vol. xiii. 165, in Pharm. Jour. and Trans.

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100 parts, and the mercury 50. Thus the proportions which originally were 4 of nitric acid (sp. gr. 1·28) and mercury 3, have become nitric acid (sp. gr. 1·42) 2, and mercury 1.* Without blaming the progressive diminution of the metal, since even with this reduction the medicament still remains very powerful, the author objects to the great excess of acid. Suggestions have been made to remove the excess of acid by washing the ointment with a large quantity of water, and then adding an equal weight of almond oil, but have been rejected in consequence of the length and difficulty of the operation, and it being far from certain that the whole of the acid excess would be thus removed.

The author having had occasion to make a comparative investigation of pure olive oil and the oil of the ground nut (*Arachis hypogœa*), found that the arachis oil possesses a great aptitude for the nitric solidification. Hence he conceived the idea of suppressing entirely the lard in the preparation of nitrate of mercury ointment. The product so obtained appeared to present such marked advantages as to induce him to make known the process.

Mercury.....	5 parts.
Nitric Acid (sp. gr. 1·42)	10 "
Nut Oil	100 "

Dissolve without heat the mercury in the acid; pour the mercurial solution into the oil, agitating from time to time with a glass or earthenware spatula. After two or three hours, according to the quantity operated upon, and at a temperature of about 20° C, the mixture begins to take a milky consistence, which lasts for about an hour, then thickens to that of a soft butter. This latter stage lasts at least two hours, during any portion of which time the ointment may be poured out. The mass spreads with perfect regularity in a paper mould; the thickness of the layer is uniform, and there is no separation between the oily and mercurial elements, showing that the combination is complete. The product does not set so rapidly as the official one; at the end of ten or twelve hours it is easily divided by a wooden knife, but this is more conveniently done after it has stood for twenty-four hours; its consistence is then similar to that of cacao butter in the summer. Two or three days afterwards it appears to attain its maximum of firmness, and some have been kept upwards of two months wihout showing any appreciable difference in its consistence. Compared with the Codex preparation, the author considers that the ointment made with nut oil has greater cohesion, is not friable, and appears much better adapted for friction, as it melts and spreads upon the skin with greater facility.

M. Faliéres is of opinion that no serious exception could be

* In the B. P., where more olive oil is used, the proportions are nitric acid 3, mercury 1.

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taken to the change of fat excipient which he proposes. The process attained in the manufacture of arachis oil has provided a white, bland, tasteless article, which is, commercially speaking, neutral. Perfumers, who are not, like pharmacists, bound by a formal code, make large use of the ground nut oil in the manufacture of pomades, cold cream, etc. A perfect type of a non-drying oil, it absorbs relatively small quantities of perfume; it requires the least wax, spermaceti, or stearine for its solidification, and finally may be kept almost indefinitely without turning rancid. The author promises at some future time to show in detail the advantages that may be obtained from the use of nut oil in a large number of pharmaceutical preparations.

ON GLYCERITE OF GINGER.*

BY J. B. MOORE.

There is, perhaps, no aromatic more popular or more highly prized for its therapeutic properties than ginger. And as a domestic remedy, in the form of the officinal "tincture," under the popular and well-known title of "Essence of Ginger," there is scarcely a preparation of our Pharmacopœia more extensively or more universally used. The popularity it has acquired in this form is some evidence of its therapeutic value. Although the "Tincture of Ginger" is, for many purposes, a most excellent and trustworthy preparation of the drug, yet in many cases of children and delicate persons, its strongly alcoholic character disqualifies it for use, and this especially in diseases of the stomach and bowels when irritation or an inflammatory condition exists. The "Syrup of Ginger," as made by the U. S. P., is too weak to possess much medicinal value, and even in its use as a flavor it is of but trifling importance. So there would seem to exist a necessity for a preparation of ginger intermediate in strength, between the tincture and syrup, and at the same time free from alcohol. The "Glycerite of Ginger," a preparation whose formula I here present, is admirably adapted to supply this want. It it about triple the strength of the officinal syrup of ginger and contains no alcohol, and mixes in all proportion with water and syrup without precipitation or turbidity.

The following is the formula and process for its preparation:

℞ Ext. Zingiber. fluid,, f ʒ i.
Magnes. carbon., ʒ x.
Glycerin. f ʒ xvj.
Aquæ, q. s.

*From the Pharmacist, June 1873.

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Mix the glycerin with an equal measure of water. Triturate the fluid extract of ginger thoroughly with the magnesium carbonate. Then add gradually, one pint of the mixture of glycerin and water, rubbing well after each addition of liquid, and strain the mixture through strong, close muslin with strong expression. Rub the residue in like manner with the remaining part of menstruum. Then transfer the mixture to a half gallon bottle containing the expressed liquid first obtained and shake the whole vigorously together. Lastly, filter, through paper, passing sufficient water through the filter to make the filtered liquid measure 32 fluid ounces.

To insure a good preparation, such as the formula and process will afford, if properly manipulated, it is necessary that some care and judgment be exercised in its manufacture. In the first place, the fluid extract of ginger, if purchased, should be of known reliable quality, or else it should be prepared by the pharmacist himself. Secondly, the fluid extract and magnesium carbonate must be thoroughly triturated together before the menstruum is added, which adding must at first be very gradual, with much rubbing after each small addition. The straining and expression directed after the incorporation of the first pint of menstruum, being a little troublesome, may be omitted, and the whole of the menstruum supplied in successive portions at once, and the whole afterwards well shaken in a bottle. But the manipulation directed in the process insures the most reliable product, and I would advise that it be carried out.

The "Glycerite of Ginger," prepared as above directed, contains the activity of 15 grains of ginger to the fluid ounce, and is about the color of sherry wine, and possesses the characteristic flavor and pungency of the ginger very strongly marked. Both of which, however, are somewhat marked and blunted by the glycerin.

It will prove an excellent corrigent addition to the various tonic, diarrhœa and stomachic mixtures. It can be associated in prescription with almost all kinds of mixtures. For pain in the stomach, accompanied by sickness, acidity or flatulence, and for many other purposes which may suggest themselves to the physician, the following formula furnishes an excellent combination, and is not an unpalatable mixture:

℞ Sodae Bicarb., ʒ j.
Liq. Morph. Sulph., ʒ ss.
Tr. Cardamom. Comp., f ʒ ij.
Sp. Ammon. Aromat., f ʒ ij.
Sacch. Album. ʒ iij.
Glycerit. Zingiber., f ʒ ij.
Aquæ Menth, Pip. q. s. ut ft. f ʒ iv.

Sig.

For an adult, one tablespoonful as required. The physician may, of course, vary the ingredients and their proportions to suit his

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own views. In cases of diarrhœa and other lax conditions of the bowels, Tr. Krameriæ, Tr. Catechu, Tr. Kino or other astringent remedies may be added, and the desired quantity of Tr. Opii or Tr. Opii Camph. substituted for the Liq. Morph., as these preparations are generally preferable to morphine in astringent mixtures. In cases of diarrhœa, etc., accompanied by tenesmus, a little castor oil, say from one or two fluid drachms, will be found a valuable addition to the above. The castor oil can be formed into a smoother mixture with the other ingredients, by the addition, also, of about two drachms of powdered gum arabic. By omitting the solution of morphine from the formula as it stands, and adding one fluid ounce of Comp. Tinct. Gentian., it will form a most elegant and efficient remedy in certain forms of dyspepsia and other disordered conditions of the stomach. As an astringent addition to the above preparation, I would recommend the tincture of krameria as preferable to either the Tinct. of Catechu or Kino. It being, as far as my experience and observation has gone, not only equally efficient, therapeutically, with either of the latter preparations, but at the same time more agreeable to the taste and forms a more elegant mixture with this and other similar combinations. It is especially preferable to Tinct. Catechu in these respects. This, however, is simply the opinion of a layman. The physician will, of course, interrogate his own experience and gratify his own peculiar notions in choosing his remedies.

LIEBIG'S FIRST VISIT TO PARIS.

The following personal reminiscence of the late Baron Liebig is from the pen of Dr. Quesneville, and is published in the May number of the *Moniteur Scientifique-Quesneville* :—

"The editor of this journal had the happy privilege of assisting Liebig in his earliest researches—by washing his glasses and running to fetch the articles required by him—when, in 1822 and 1823, he came to Paris to perfect himself in the study of chemistry.

"Gauthier de Claubry, who is still living, and was then a man of considerable reputation and usually waited upon after the grand visit had been made to Thenard, presented Liebig to my father. At that time there was in Paris scarcely any place but the private laboratory in the Rue du Colombier where a chemist could work freely ; that is to say, without a protector taking the half of his labour for chemicals used and apparatus borrowed. This laboratory was one of the appurtenances of the manufactory of chemical products which my father had purchased from Vauquelin and the heirs of Fourcroy. Gauthier de Claubry, who was acquainted with this laboratory, where Vauquelin, Chevreul, Serrulas, and himself had

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laboured and taught, mentioned it to Liebig, and it was in this commodious place that the illustrious chemist, newly arrived in the great city, prepared his first work on the fulminates.

"At this time I was twelve years of age and it was I that carried to the great German the articles required for his experiments. My mother also conceived a great liking for him and charged herself with his firing. She filled his stove, and even fitted up at his hotel a fireplace *a la prussienne* : for the young chemist was not rich, and was completely without fuel in the middle of a most rigorous winter. Liebig laboured there one entire year, and when his memoir was finished he dedicated it to Thenard. Gay-Lussac was astonished by it, and requested Liebig to communicate to him his ideas : the second investigation was made in conjunction with Gay-Lussac and in his laboratory.

"But Liebig never forgot his early days in Paris and the assistance he received from my father, so that when he learned from Gerhardt, in 1840, that I had founded the *Revue Scientifique*, and that I had engaged the latter to abstract foreign memoirs for its pages, he wrote to me at once as follows :—

"It will not be necessary to send you my journal by post, for, as I have already promised, you will receive proofs of all original memoirs before the numbers of the journals containing them are printed and published ; in this manner you will be able to make these memoirs known to the French public four or six week earlier. This winter I have had the good fortune to count among my pupils six very clever young chemists ; I have proposed to them to undertake together a thorough investigation of the fat bodies, and this work, commenced eight months since, is now nearly finished.'

"Liebig finished his letter with the following declaration, which it is curious to read in the present day :—

" 'You may, my dear Quesneville, give provisional information as to the results, and I will send you the complete memoirs as soon as I can. You will see, though, that while they were occupying themselves at Paris in useless discussions on the theory of substitutions, we cultivated our field with organized forces. To-day we collect the fruit. Can you be astonished that I have taken so little part in these combats fought about theories so ephemeral, and that in my book I have not even spoken of them ? It was because I would not draw off the attention of my readers towards matters so purely personal. In a couple of years they will not be spoken of, and the importance attached to them to-day will have vanished like a dream.' "

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ON THE TASTELESS IODIDE AND CHLORIDE OF IRON.

The following letter was addressed to the editor of the American *Journal of Pharmacy*, and relates to the subject treated of in Mr. Creuse's former paper, reproduced in this journal, Vol. vi. No. 12, p. 428:

DEAR SIR,—If you ask me what kind of combination citrate of potassa can form with sesqui-iodide of iron, I will answer frankly that I cannot say with certitude; it is probably a combination similar to the medicinal pyrophosphate of iron or the green scales of sesqui-phosphate of iron and citrate of potassa I sent you last year. That they form a combination does not admit of any doubt, for the physical and chemical changes are such as would not be presented by a simple mixture. But, be the combination what it may, I believe the new salt represents exactly the results of what happens in the stomach when protoiodide of iron is administered. Protoiodide of iron cannot be absorbed as it is, for no protosalt of iron is ever found in the animal system; when ingested into the stomach it must change in whole or in part into sesqui-iodide, which, combining with the citrates, tartrates, oxalates, malates or lactates, etc., always present in human food, becomes ready for absorption. The balance of the iodide of iron is probably eliminated, like all unabsorbed substances (I leave acetates purposely out of the list, for acetic acid is monobasic, and this class of compounds seem to be limited to the salts of polybasic vegetable acids. This explains also why protoiodide of iron is best administered just before a meal; for the food supplies the stomach with both the oxygen and the vegetable salts necessary for the digestion of the ferrous compound.

The new iodide of iron according to this theory, ought to be more effective and more uniformly so than the protoiodide, for it comes all ready for absorption, while the old salt, being absorbed only with the help of other variable substances, will vary more or less in its effects, besides interfering with the natural functions of the stomach.

Experiments made by Dr. Lalanne, of this city, have confirmed this view and have served to determine the medicinal dose of the new combination. This was necessary on account of the entirely different character of the new and the old form of iodide of iron. It has been found that from one to three grains of the salt have the same medicinal effect as an average dose of the U. S. Pharmacopœia syrup of protoiodide. As the new salt contains about 42 per cent. of iodine and 9 per cent. of metallic iron, this shows that its effects are proportionately greater than those obtained from the same substances administered as protoiodide.

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Its medical properties are, otherwise, precisely the same as those of the officinal iodide of iron, and its administration has always been followed by the most gratifying results; but it is not my province to speak of this, except to mention that it has found great favor among children and female patients, on account of its relatively pleasant taste, and because it never blackens their teeth.

Much of this applies also to the tasteless tincture of muriate of iron. The officinal tincture is still more injurious to the teeth than the syrup of protoiodide of iron; it not merely blackens them, but destroys them when used long enough. I have heard some dentists speak very strongly on the subject. The tincture I send you contains the same proportion of iron as the tinct. ferri sesquichloridi, U. S. P. I left the dose the same as that of the officinal preparation, but I have no doubt that experiments now being made will warrant a reduction in the dose.

In regard to the quantity of citric acid needed for one fluid ounce of tincture of muriate of iron, I have found from recent experiments that it requires from 90 to 95 grains of citric acid neutralised by 180 to 190 grains of crystallized carbonate of soda to transform that quantity into the tasteless compound. It seems singular at first sight that the more acid is the solution of muriate of iron, the more citric acid it requires; but it is easy to account for that apparent anomaly; for, any excess of muriatic acid decomposing a corresponding quantity of citrate of soda, more of that salt is needed in proportion to the free acid present.

J. CREUSE.

NEW YORK, May 20, 1873.

ANALYSIS OF COBRA POISON.—Cobra poison has been recently tested as to its enduring action when taken from the snake and preserved. Some was kept in small bottles and then injected under the skin of various animals with fatal effects. It was also chemically analyzed and gave as the result:—Carbon, 46; nitrogen, 13; oxygen, 6; sulphur, 25; the rest of hydrogen. This, as M. Dumas remarks, is exactly the composition of beer-yeast, and supports the idea that the cobra poison is of the nature of an animal ferment.—*Phila. Med. and Surg. Reporter.*

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SOLUTION OF ISINGLASS IN WATER.*

BY C. CARROLL MEYER.

One hundred grains each of the following kinds, American ribbon, American sheet, Russian and Prussian(?) isinglass were treated separately, first with f℥viii of water to soften, then f℥viii more of water were added and boiled until all soluble matter was extracted, then filtered, and the following table will show the solubility of the different kinds experimented with:

ISINGLASS.	QUANTITY USED.	SOLUBLE.	INSOLUBLE.
American strip	100 grs.	70 grs.	30 grs.
" sheet	100 "	82 "	18 "
Russian	100 "	88 "	12 "
Prussian	100 "	80 "	20 "

From the foregoing experiments it will be seen that the Russian is the most soluble and the American strip the least soluble.

The bladder of a hake fish, weighing ℥xv, was washed with water to remove salt, and boiled with sufficient water until all soluble matter was obtained, then filtered, and found to contain ℥i of insoluble matter.

As aqueous solutions are prone to decompose, experiments were made to see if anything would arrest decomposition, and glycerin was found to answer very well in the proportion of one part glycerin to fifteen parts solution of isinglass. Solutions to which glycerin was added kept sweet and were quite palatable, while those to which no glycerin had been added soon decomposed, and became quite offensive to both taste and smell.

* From the American Journal of Pharmacy.

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Editorial.

LAW IN REGARD TO THE SALE OF WINES AND SPIRITUOUS LIQUORS BY DRUGGISTS IN ONTARIO.

It is not generally known that, towards the close of the last session of the Ontario Legislature, an Act was passed which has an important bearing on the right of druggists to dispense or sell liquors for medicinal purposes. It is entitled an Act to amend the Acts respecting Tavern and Shop Licenses, and may be found in full on the ninety-second page of the *Ontario Gazette Extra* of April, 1873.

It will not be found necessary to consult the Act *in extenso*, as the portion which relates to the interests of druggists is altogether comprised in the first section, and is exceedingly concise. After requiring that all persons who deal in spirituous, fermented, or other manufactured liquors, shall be duly licensed under the provisions of former Acts, it is stated that this clause does not apply to brewers and distillers, "nor to any chemist and druggist, duly registered as such, under and by virtue of the *Pharmacy Act of* 1871, who keeps or has such liquors for medical purposes only."

It will it be remembered that when the Pharmacy Act was framed a similar clause was introduced, but was expunged when the measure was discussed in committee, and it was then confidently stated, by competent authority, that any further attempt to push the clause would certainly prevent the passing of the bill. We are glad to see, however, that the Legislature are now prepared to recognize the improved status of the body of pharmacists, and by granting this privilege to members of the College, have given the best earnest of an increased confidence, which, we trust, our druggists will never abuse.

We cannot, at present, say, with certainty, how this Act will affect municipality licenses, but presume that they will follow the same regulations as those collected into the Consolidated Revenue Fund of the Province.

We may note that we have heard that the tavern keepers of some towns have appealed against some of the provisions of the

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Act, and have taken the ground that the entire Act is illegal as it was not competent for the Provincial Legislature to pass a measure affecting trade and commerce, generally; such legislation being confined to the Dominion Government. How this matter is, or how it will terminate, we cannot say, and as it may be assumed that the provincial legislature is a very fair authority, we do not think it necessary to hazard an opinion.

PORTABLE GAS APPARATUS.

Some four or five years ago, there appeared in the *Scientific American*, a description of a patent which had been granted for carburetting hydrogen gas. The apparatus, of which illustrations were given, consisted, essentially, of a vessel for the generation of hydrogen, an arrangement for washing and carbonizing the gas, and a gasometer. The hydrogen evolved from a mixture of iron, or zinc turnings, water, and sulphuric acid, was made to pass through a vessel containing petroleum naphtha, by which means the gas which would otherwise burn with a pale, blue, almost non-luminous flame, became possessed of the light-giving property. The residue in the gas-generating vessel, consisting of sulphate of zinc, or iron, was said to be sufficient to pay the greater part, if not the entire expense of the process.

Being somewhat anxious to test the practicability of this process we devised an apparatus for making the experiment on a small scale, and, by the aid of a Pepy's gasometer, collected about ten or twelve gallons of the carburetted gas. Attachment with a gas burner was made, and on lighting the jet a clear and luminous flame appeared. The experiment was repeated with fresh quantities of gas, and the conclusions arrived at were: (1st) that the luminosity was equal to that of ordinary coal gas; (2nd) that the rate of consumption was greater than with coal gas; (3rd) the *hold*, or adhesion of the gas to the burner was so slight that the flame was easily blown out, (this may have arisen from deficient pressure); and (4th) that the cost would not compare favorably with that of ordinary gas.

Our reasons for stating these experiences are, that a patent has recently been obtained in Canada for the same process, and a company has been formed, through which every endeavor is being made

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to push business. In many of our country towns the druggist is required to act in the capacity of consulting chemist, and we doubt not the advice of some of our readers has already been asked. We hope these details will prove useful, and, in addition, we tender the following computation, extracted from the *American Chemist*, of the cost of this illuminating material as compared with coal gas:

To make one cubic foot of hydrogen gas there will be required—

Oil of vitriol	0·26 lb.
Zinc	0·17 "

Or if iron be substituted for zinc,

Iron	0·15 lb.

The cost of hydrogen by this process will be per cubic foot:

From Zinc.

Oil of vitriol, 0·26 lb. at 2½ cents	0.65 cent.
Zinc, 0.17 lb. at 8 cents	1·36 "
	2·01 "

From Iron.

Oil of vitriol, 0·26 lb. at 2½ cents	0.65 cent.
Iron (wrought scrap), 0·15 lb. at 2 cents	0·30 "
	0·95 cent.

Petroleum oil will not answer for carburetting this hydrogen, though if of a poor quality, that is, contains naphtha, etc, it will yield up these latter impurities and thus carburet a small volume of gas. Gasoline and benzol are the best carburetting liquids. Compared with ordinary coal gas, however, there is a great economy in the use of the latter. The highest price charged for coal gas is $4 per 1000 cubic feet, which would be 0·4 cent per cubic foot against 2·01 cents, or 0·95 cent for the hydrogen, to which must de added the cost of the carburetting material, as of course, the hydrogen has no luminosity. So that the person who proposes to furnish a six-feet-per-hour gas light, equal to ordinary coal gas, for 0·84 cent per hour, is convicted of ignorant or fraudulent pretentions. If the carburetting material cost nothing, such a light could not be afforded for less than 5·7 cents. City gas works, which the gas is claimed to rival in economy, even at the high price of $4 per 1000 cubic feet, would furnish the same light for 2·4 cents.

STATUE TO BARON LIEBIG.—The German Chemical Society has resolved to erect a statue in honor of the late illustrious chemist, and, in aid of this object, to invite the assistance of pupils and friends, as well as that of chemists, throughout the world.

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Editorial Summary.

Improved Formula for Tincture of Rhubarb.—J. B. Moore, *(Am. Jour. Pharm.)* remarks on the liability of this tincture to deposit, through which cause its pharmaceutical, as well as medicinal value is affected. Chrysophanic acid, which is supposed to be concerned in the medical activity of the drug, has been found in the precipitated matter, and the sediment is to druggist and patient a very unsightly object. Some experiments were made with a view of producing a most stable preparation, and, in this, the author says he has been eminently successful. The formula recommended is as follows:

℞.	Pulv. Rhei, No. 40	three troy oz.
	" Cardamomi, No. 40...	half troy oz.
	Glycerinæ	four and one quarter fl. oz.
	Alcohol. fort..... ...	seventeen fl. oz.
	Aquæ.	twelve and three quarter fl. oz
	Alcohol. dil	q. s.

Mix the glycerin, alcohol fort. and water. Moisten the powders, previously mixed together, with the mixture; pack the moistened mass in a glass jar or other close vessel, and let it stand for twenty-four hours. Then rub the powder through a No. 20 sieve, and pack it in a glass funnel prepared for percolation, and gradually pour upon it the remainder of the menstruum, and when it has all been absorbed continue the percolation with diluted alcohol until thirty-two fluidounces are obtained.

Recovery of Quinine Waste.—F. R. Williams, *(Pharmacist)* proposes a method for the recovery of the alkaloid from solutions, from which it has been in great part precipitated, but, owing to the solubility of quinia in water, and especially in water containing ammonia, which still contain a notable quantity of alkaloid. It was found that, with the most careful manipulation, and the most judicious application of water, 20 grains of pure anhydrous alkaloid were lost in the washings from one troy ounce of sulphate of quinia. This loss is equal to about 5½ per cent., and, at present prices, would represent the sum of 10 cents, which amount, considering the number of preparations in which precipitated quinia is required, would certainly repay any attention bestowed upon its recovery. The author proposes to precipitate this quinine as a tannate, and from this source to supply the shop demand for the sulphate. The

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solution should first be rendered slightly acid by the addition of a sufficient quantity of sulphuric acid, and tannic acid in solution should then be added as long as a precipitate appears. If the tannic acid be added to the alkaline liquor, the precipitate will have a darker color than when sulphuric acid is used. The precipitate should be well washed, pressed, and then dried by exposure to the air. Twenty-five grains of sulphate yield about a drachm of tannate, the latter salt containing less than one-third its weight of pure quinia.

Opium in Proprietory Medicines.—S. Dana Hayes (*American Chemist*) calls attention to the unrestricted use of opium and its preparations in the nostrums largely used by an indiscriminating public. From analyses made, the author finds that in many cases where the medicine is intended for internal use, the quantity of morphine present varies from one quarter of a grain to one and a half grains, in each dose as stated in the printed directions accompanying the medicine. A most noted piece of rascality was that of a "Cure for the Opium Habit," which was found to be a clear solution of sulphate of morphia, colored pink by aniline red and sweetened with sugar; and a dose containing very nearly two grains of sulphate of morphia, was to be taken three times a day by the patient when suffering severely from depression and other symptoms. The "brandy," sold by a dealer in medicines in the country was found to have been mixed with laudanum and extended with water in such proportion as to insure large profits, but it contained morphia equal to two and a half grains of opium in four fluid ounces of the "brandy." A tooth wash contained nearly four-tenths of a grain of morphia in each fluid ounce; and a cough mixture, more than three-tenths of a grain in the dose directed for a child.

Iodide of Starch.—E. Duclaux, (*Ann. Chim. Phys., in Am. Chemist*) differs from the general opinion that iodide of starch is a definite chemical compound, he considers that it is merely a case of molecular adhesion, and that the iodide is a true solution of iodine in starch, using that term in a very general sense. He bases his view on several of the physical and chemical characteristics of this body. The composition of the iodide is by no means constant, as it can be obtained with the iodine varying from 2 to 41 per cent. Different methods of preparation, give products which vary very greatly in their composition. The formation of iodide of starch in solution depends essentially on three conditions: 1, on the quantity of starch; 2, on the amount of iodine present; and 3, on the quantity of water

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used. From experiments made by the author, it was found that, in the presence of large quantities of water, a considerable excess of iodide must be used in order to develop the blue color; and that it seems necessary for the solution to contain a certain proportion of iodine before its action on starch will commence. For further particulars in regard to the color, and decolorization of the so-called iodide we must refer those interested to the original paper.

Test for Bismuth in Ores.—Von Kobell *(Nues Report f. Pharm., in Pharmacist)* proposes, as a test for small quantities of bismuth, that the powdered ore be mixed with equal weights of iodide of potassium and sulphur, and placed upon a charcoal support. If bismuth be present, the mixture will, when heated before the blowpipe, assume a scarlet color, due to the formation of iodide of bismuth. If the ore contain sulphur, the sulphur in the formula may be omitted.

Preparation of Caramel.—A writer in *Dingler's Journal* recommends a process for sugar coloring in which carbonate of ammonia is added to the boiling sugar at the time that the charring action commences. The proportion of carbonate used is three ounces to each ten pounds of sugar. The salt should be in the condition of a coarse powder.

Compound for removing Nicotine from Tobacco Smoke.—Some years ago it was announced that tannin possessed the property of abstracting nicotine from tobacco smoke. We notice that this has recently been made the subject of a patent in the United States. The smoke is drawn through a sponge saturated with a solution of tannic, tartaric or citric acids, glycerine, and a flavoring ingredient, as Florida, or clove water.

Meconate of Quinia.—P. T. Austen, *(Am. Chemist)* has obtained this salt by adding to an alcoholic solution of quinia a similar solution of meconic acid. The meconate falls as a white, curdy precipitate, which is soluble in hot water, crystallizing therefrom in definite and regular form. The aqueous solution gives reactions for meconic acid and quinia. The salt contains, by calculation, 56.66 per cent of alkaloid.

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Improved Method of Bending Tubes.—A writer in the *Journal of the Franklin Institute* recommends the use of sand for producing an even and regular bend in glass tubes. The tube to be bent is filled with dry sand, the ends are stopped, and heat is applied. It is said that the tube may be doubled upon itself without unsightly creases, or a flattening of the external angle. Sand is often thus applied in the bending of lead pipe.

Estimation of the Tannin Value of various Substances used for Dyeing.—Accrding to Kurz (*Reimann's Farberzeitung*) one pound of tannic acid represents, respectively, 40 pounds sumach, 18 pounds myrobalans, 14 pounds divi divi, or 11 pounds gall-nuts.

Books and Pamphlets.

PHARMACEUTICAL LEXICON; *A Dictionary of Pharmaceutical Science, containing a concise explanation of the various subjects and terms of Pharmacy, with appropriate selections from the collateral sciences; by* H. V. SWERINGEN, Member of the American Pharmaceutical Association. Philadelphia: LINDSAY & BLAKISTON, 1873, 8vo., pp. 576.

To do thorough justice to so comprehensive a title as that borne by the work under review, would entail a task of no ordinary magnitude, and, for its elucidation, would require a volume of no common size. The range of subjects embraced by the term, pharmaceutical science, is very extensive, comprising four, if not five, distinct branches of knowledge, each containing an almost endless variety of subjects. The author appears to have recognized this fact, and, on behalf of his work, modestly concedes a certain amount of imperfection, but, at the same time, claims to have produced, within reasonable limits, a work which will prove practically serviceable for ready reference, by supplying immediate and concise information upon *many* of the innumerable and varied topics of professional inquiry. In this respect we think he has succeeded, and we believe the dictionary will prove very useful to those whose time will not allow of more extended research, and whose purposes do not require them to go beyond an extended definition of the term or subject upon which they may desire information.

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The book is divided into two parts, the first containing the dictionary, which extends over four hundred pages; and the second, which embraces a number of tables and other useful information, to which we shall afterwards call attention. In order to show the scope of the definitions given in the dictionary, we cannot do better than transcribe half a page:

LUGOL'S SOLUTION. R. Iodine, 6 drachms; iod. potassium, one and a half ounces; distilled water, one pint.

LUNA. Silver.

LUNA CORNEA. Chloride of silver.

LUNAR CAUSTIC. See *Argenti Nitras Fusa.*

LUNGWORT. (*Pulmonaria officinalis.*) An herbaceous, perennial, European plant, cultivated in this country in gardens, the leaves of which are considered pectoral and demulcent.

LUPININE. A neutral organic principle, greenish, amorphous, bitter, insoluble in absolute alcohol and ether, obtained from the seed of Lupinus albus.

LUPULIN. (*Lupulina.*) The yellow powder attached to the strobiles of Humulus lupulus.

LUPULINE, LUPULITE. } See *Humulin.*

LUPULUS. See *Humulus.*

LUTE, LUTING. } A composition of clay or other tenacious substance, used for stopping the juncture of vessels so closely as to prevent the escape or entrance of air, to protect them when exposed to heat.

LUTEIN. A name given to the crystallizable yellow coloring principle found in the yoke of eggs, in the yellow fat of butter, in annotta, in the carrot, and in the anthers and petals of many plants.

LUTEOLIC ACID. See *Luteolin.*

LUTEOLIN. (*Luteolic Acid.*) A peculiar yellow coloring matter obtained by sublimation from Reseda luteola, composed of $C_{40}H_{14}O_6$.

LUTESCENT. Of a yellowish color.

LUTIDINA. An aromatic oil of the composition $C_{14}H_9N$, obtained from cinchonia by the action of potassa.

LYCIA, LYCIN, LYCINA. } A peculiar alkaloid contained in the matrimony vine, or Lycium barbarum, a thorny shrub growing in Asia and the south of Europe, the leaves of which are used by the physicians of Japan.

The second part of the book extends over about one hundred and fifty pages, and, as we have said, is of somewhat varied contents. It is commenced by a list of the abbreviations most commonly employed in writing prescriptions. This is followed by a lengthy enumeration—about forty pages—of "select prescriptions," classified according to the leading therapeutical properties of the various mixtures. This part of the work would have been rendered much more valuable if the authority for the recipes had been affixed. This has been altogether withheld, so that we are at a loss to know whether this list is a compilation, or whether the author of the book is responsible for the prescriptions, which, in many cases he so highly recommends. While speaking of this, we feel compelled to say that, throughout the entire work, the author has been somewhat lax in acknowledging his indebtedness to others, and though, except in the case noted, the usefulness of the book is not impaired by this oversight, it would have been more courteous—to use the

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mildest term we can employ—if a little more attention had been given to this particular.

The long posological table of Garrod is reproduced entire; and we have also a list of the technical names of diseases, with a concise definition of each, which will serve to render the perusal of medical literature more profitable to those who are unacquainted with the terms by which our ailments are technically designated. This is followed by a very good and well arranged list of poisons, with the symptoms produced, and the appropriate treatment. The chemical tests for each substance are also given. We have also the usual tables of weights and measures, boiling points of various solutions, atomic weight of the elements, specific gravities of common solids, liquids, and gases, with other useful tables pertaining to pharmaceutical and chemical matters.

A chapter on chemical formulas, and also one on the atomic theory in chemistry, will give the reader an idea of the general principles of chemical philosophy, as recognized by the majority of chemists of the present day. It would have been better if these more recent views in regard to combining weights had been applied in the revision of the lengthy table of "pharmaceutical equivalents," reproduced from the U. S. Dispensatory. Turning to the chapters aforesaid, and also to the atomic weights of the elements, as given in another part of the book, we find the weight of oxygen stated as being 16, while in the table of equivalents it figures throughout as 8. This would be somewhat puzzling to an uninformed reader. A very useful portion of the book is that which relates to the dietary for invalids, as also that on the preservation of dead bodies for interment, or dissection, in which the methods used in the leading colleges and hospitals are given. A far more pleasing, though, perhaps, less instructive part, is that entitled, "Leaves from an old Dispensatory." From this the reader will learn the condition of pharmacy in the year of our Lord 1676, when the ancient Salmon, of respected memory, had the regulation of matters pharmaceutical. In those days the worthy doctor found it no less a task to compile his dictionary than does our author of the present, inasmuch as he tells us that in the preparation of his book he had "delivered the Sum and Substance of Great Volumes, and, as in a glass, represented the reduction of Hercules his labors."

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REMARKS ON STRICTURES OF THE URETHRA OF EXTREME CALIBRE; *with cases, and a description of new Instruments for their Treatment;* by F. N. OTIS, M.D. New York: D. Appleton & Co., 1872.

This is the title of a pamphlet of some 25 pages, containing the substance of a paper read before the New York Medical Journal Association. It more particularly refers to the instruments required in the treatment of cases of urethral strictures, and is illustrated by engravings of a number of these appliances.

OPTHALMIC AND AURAL SURGERY REPORTS, by JULIAN J. CHISHOLM, M.D. Baltimore.

This pamphlet contains reports of cases of special interest which have been presented for treatment at the Baltimore Eye and Ear Institution.

ANNUAL REPORT *of the Superintendent and Physician of the New York State Inebriate Asylum.*

ANNUAL ANNOUNCEMENT *of the Woman's Medical College of Pennsylvania,* 1873–4.

Correspondence.

To the Editor.

I hope the forthcoming meeting of Council will be productive of some energetic action concerning those who neglect to register. I am satisfied that if the College of Pharmacy is not be brought into complete contempt, these delinquents must be attended to. Would it not be a good plan to have the registrar write to one member in good standing in each district, asking for the names of all persons doing business in their neighborhood. Then compare his list, so obtained, with the list of registered chemists and druggists, and just notify and then prosecute the delinquents through some respectable lawyer; or the *Dominion Directory* might be examined, and compared with the registrar's list. Perhaps some one will think of a better plan, but I feel sure something must be done. Out of five druggists in the town in which I reside, but two have paid their fee for this year.

JUSTICE.

July 13, 1873.

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Practical Formulæ

Syrup of Tar.—Mons. Latour gives the following formula in the *Reportorie de Pharmacie :*

Tar, washed with boiling water	100	grammes.
White sugar	600	"
Powdered gum Senegal	100	"
Water	400	"
Simple syrup	2,000	"

The tar must be triturated in a porcelain mortar with sugar and the powdered senegal until a perfect mixture is obtained. Then the mixture should be turned into an evaporating dish, previously made hot, and the water, with sufficient syrup, boiling, added. The mixture is to be continually triturated until a perfect emulsion is obtained, and the rest of the syrup, boiling, is to be added by degrees, having brought the syrup to the boiling-point, and strained while hot. One part of tar is contained in thirty parts of the syrup. M. Latour adds that a teaspoonful mixed with a tumblerful of bitter water gives a proper draught of tar water, in which the tar flavor is well disguised.—*New Remedies.*

Lotion of Acetic Acid for Baldness.—The following lotion is said to be superior for a shampooing liquid, for removing dandruff, and useful and pleasant application for baldness. It is, of course, moderately stimulating, and in those cases in which the hair-follicles are not destroyed, but have become merely inactive, we should think it might prove both efficacious and agreeable: Take of acetic acid, 1 drachm; Cologne water, 1 ounce; water, to make in all 6 ounces. Mix.—*Druggists' Circular.*

Varnish for Harness.—Take of alcohol 95 p. c., 1 gallon; white turpentine, 1½ pounds; gum shellac, 1½ pounds; Venice turpentine, ¼ pound. Let it stand in a jug in the sun or by a stove until the gums are all dissolved, then add: Sweet oil, 4 ounces; lampblack, 2 ounces. Mix well together.—*Ibid.*

Substitute for Cocoaine.—Take of cocoa butter, 3 drachms; castor oil, 15 fl. ounces; alcohol, 95 p. c., 15 fl. ounces; glycerine, 2 fl. ounces. Melt the oils together with gentle heat, transfer to a bottle, and gradually add the alcohol, then the glycerine or as much of it as it will take without becoming milky. Perfume to suit. This is nearly transparent; but the addition of a larger proportion

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of cocoa butter will give the hair-oil that *lardy appearance* appreciated by some persons.—*Ibid.*

Ginger Beer.—Take of refined sugar, 3 pounds; bruised ginger, 2 ounces; cream of tartar, 1 ounce; lemons, sliced, number, 4; boiling water, 4 galls.; yeast, 8 ounces. Pour the water on the first four ingredients, and infuse for two hours; then strain, add the yeast, and when fermentation has continued for a few hours, put it into stone bottles and secure the corks.—*Ibid.*

Lemon Kali.—Take of bicarbonate of soda; tartaric acid, of each, ʒ ijss.; sugar (white), ʒ xi. All to be in the state of a fine powder, and separately dried by a gentle heat, after which they are mixed together and flavored with oil of lemon, 10 drops, and otto of rose 1 drop. Passed through a sieve and put into dry bottles well corked.—*Pharmacist.*

Varieties.

Robur.—This new form of spirit originated from the practical observation of a well-known traveller that, by combining a preparation of theine with spirit, he obtained a beverage which was eminently stimulant and restorative after a hard day's work. From what is known of the action of the active principle of tea and the equally known effects of alcohol, this is thoroughly intelligible; and the idea of the combination of the nervine tonic—which, in the form of tea, coffee, cocoa, or mate, is the beverage of the whole civilized world—with alcohol, selected by an equally strong and universal instinct, may be considered to be a very happy one. Both have the prescriptive claim to confidence derived from the argument *quod ubique quod ab omnibus*. That it is at once a stimulant, a nervine tonic, and an aid to weak digestion, follows from its composition, and these effects have been verified in practice. The main practical problem was to render it entirely palatable while maintaining its purity. This has been satisfactorily accomplished, and a hot toddy of robur is one of the most palatable of alcoholic drinks. In the treatment of exhaustive diseases, wherever spirit is now employed, robur is, we think, called to render great services, and deerves a very ample trial. As an alcoholic beverage, its qualities speak for themselves. It is, we fully believe, more wholesome and far less liable to abuse than any of the customary forms of spirit.—*London Medical Record, in New Remedies.*

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JOINING RUBBER.—Rubber is easily joined and made as strong as an original fabric, by softening before a fire and laying the edges carefully together, without dust, dirt, or moisture between. The edges so joined must be freshly cut in the beginning. Tubing can be united by joining the edges around a glass cylinder, which has previously been rolled with paper. After the glass is withdrawn the paper is easily removed. Sift flour or ashes through the tube to prevent the sides from adhering from accidental contact.—*Ibid.*

A NEW SUBSTITUTE FOR QUININE.—Among the specimens of drugs exhibited in the International Exhibition in Vienna is the Echisess scholaris, a plant of the natural order *Apocyneæ*. It is especially abundant at Luzon, in the province of Batanga, in the Phillipine Islands, and its bark has long been used by the natives, under the name of dita, as a remedy in all kinds of fever. Herr Gruppe, an apothecary in Manilla, has found it in an uncrystallizable very hygroscopic bitter substance, to which he has given the name of ditain. The principal Spanish physician in Manilla, Dr. Miguel Zina, has given it to numerous hospital patients under his care, and has found that ditain is not only a perfect substitute for quinine, but that its use is not followed by any disagreeable results which often attend the use of quinine. It is given in the same doses and in the same way as quinine. In many cases, also, its activity as a tonic was well marked. The ditain is prepared from the bark in the same way as quinine from cinchona: 100 grammes of bark give 2 grammes of ditain, 0.85 gramme of sulphate of lime, and 10 grammes of a perfectly inactive extractive matter. A single tree yields a large quantity of bark without injuring its growth. It is calculated that the price of ditain in Europe would be about 160 francs per kilogramme (3s. 6d. to 4s. per ounce).—*British Medical Journal.*

ANOTHER PREVENTIVE OF MERCURIAL POISONING.—A few months since we gave the results of some experiments which indicated that chlorine gas would prevent the dangers which workmen suffer in mercury mirror factories. A later sugestion, which was made to the French Academy, is to use ammonia. M. Myer has employed it with success in the mirror factory at Chauncy for several years. Since 1858 no workman has been attacked by the mercury, while those men who were subject to the attacks of the disease have since suffered more rarely and less severely. It is recommended that the ammonia should be thrown round the shops in the evening rather than in the morning.—*Jour. of App. Chem.*

PORTABLE INK.—At a recent meeting of the Frankfort Polytechnic Asociation, Prof. Boettger exhibited a novel kink of ink, which is adapted to take on journeys and exploring expeditions. White blotting-paper is saturated with aniline black, and several sheets are pasted to form a thin pad. When wanted for use, a small piece is torn off and covered with a little water. The black liquid which dissolves out is a good writing ink. A square inch of the paper will give enough ink to last for a considerable writing, and a few pads would be all that an exploring party need carry with them. As water is available, the ink is readily made.

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Drugs, Medicines, &c.	$ c.		$ c.
Acid, Acetic, fort	0 14	@	0 15
Benzoic, pure	0 23		0 30
Citric	1 50		1 60
Muriatic	0 05		0 06
Nitric	0 11½		0 15
Oxalic	0 27		0 30
Sulphuric	0 03½		0 07
Tartaric, pulv	0 50		0 50
Ammon, carb. casks	0 23		0 24
" jars	0 23		0 24
Liquor, 880	0 25		0 28
Muriate	0 14		0 15
Nitrate	0 45		0 60
Æther, Acetic	0 45		0 50
Nitrous	0 35		0 37
Sulphuric	0 50		0 50
Antim. Crude, pulv	0 13		0 17
Tart "	0 65		0 70
Alcohol, 95 per ct.....Cash	1 60		1 72
Arrowroot, Jamaica	0 16		0 22
Bermuda	0 50		0 65
Alum	0 02½		0 03½
Balsam, Canada	0 45		0 50
Copaiba	0 85		0 90
Peru	3 80		4 00
Tolu	0 90		1 00
Bark, Bayberry, pulv	0 20		0 22
Canella	0 17		0 20
Peruvian, yel. pulv	0 42		0 50
" red "	2 10		2 20
Slippery Elm, g. b	0 15		0 20
" flour, packets	0 28		0 32
Sassafras	0 15		0 20
Berries, Cubebs, ground	0 20		0 25
Juniper	0 06		0 10
Beans, Tonquin	0 62		1 10
Vanilla	26 00		28 00
Bismuth, Alb	3 40		4 00
Carb	3 65		4 00
Camphor, Crude	0 38		0 40
Refined	0 45		0 50
Cantharides	2 80		3 00
Powdered	2 85		3 10
Charcoal, Animal	0 04		0 06
Wood, powdered	0 10		0 15
Chiretta	0 20		0 30
Chloroform	1 10		1 65
Cochineal, S. G	0 80		0 95
Black	1 10		1 20
Colocynth, pulv	0 50		0 60
Clolodion	0 90		1 00
Elaterium oz	5 80		5 90
Ergot	0 50		0 60
Extract Belladonna	2 00		2 25
Colocynth, Co	1 25		1 75
Gentian	0 50		0 60
Hemlock, Ang	0 85		0 95
Henbane, "	2 10		2 40
Jalap	5 00		5 50
Mandrake	1 75		2 00
Nux Vomic oz	0 40		0 50
Opium oz	1 50		
Rhubarb	5 00		5 50
Sarsap. Hon. Co	1 00		1 20
" Jam. Co	4 00		4 50
Taraxicum, Ang	0 70		0 80
Flowers, Arnica	0 17		0 25
Chamomile	0 32		0 40
Gum, Aloes, Barb. extra	0 70		0 80
" " good	0 40		0 50
" Cape	0 16		0 20
" " powdered	0 20		0 30
Socot	1 05		1 35
" " pulv	1 00		0 00
Arabic, White	0 70		0 75
" powdered	0 60		0 75
" sorts	0 28		0 30
" " powdered	0 42		0 50
" com. Gedda	0 13		0 16
Assafœtida	0 35		0 42
British or Dextrine	0 13		0 15
Benzoin	0 35		0 75
Catechu	0 12		0 15
" powdered	0 25		0 30
Euphorb, pulv	0 35		0 40
Gamboge	1 40		1 50
Guaiacum	0 35		1 00
Myrrh	0 50		0 70

Drugs, Medicines, &c.—*Contd.*	$ c.		$ c.
Sang Dracon	0 60		0 70
Scammony, powdered	6 00		6 50
" Virg. "	14 50		—
Shellac, Orange	0 55		0 60
Gum, Shellac, liver	0 50		0 52
Storax	0 40		0 45
Tragacanth, flake	1 10		1 40
" common	0 53		0 65
Galls	0 28		0 32
Gelatine, Cox's 6d	1 15		1 20
Glycerine, common	0 25		0 30
Vienna	0 25		0 30
Prices	0 60		0 75
Honey, Canada, best	0 15		0 17
Lower Canada	0 14		0 16
Iron, Carb. Precip	0 20		0 25
" Sacchar	0 40		0 55
Citrate Ammon	1 50		1 50
" & Quinine, oz	0 53		0 58
" & Strychine "	0 17		0 25
Sulphate, pure	0 08		0 10
Iodine, good	10 00		10 50
Resublimed	10 75		11 00
Jalapin	1 25		1 50
Kreosote	2 40		2 50
Leaves, Buchu	0 22		0 30
Foxglove	0 25		0 30
Henbane	0 35		0 40
Senna, Alex	0 27		0 60
" E. I.	0 14		0 20
" Tinnevilly	0 20		0 30
Uva Ursi	0 15		0 17
Lime, Carbolate brl	5 50		—
Chloride	0 06		0 07
Sulphate	0 08		0 12½
Lead, Acetate	0 14		0 15
Leptandrin oz.	0 60		—
Liq. Bismuth	0 50		0 75
Lye, Concentrated	1 75		2 00
Liquorice, Solazzi	0 50		0 55
Cassano	0 23		0 40
Other brands	0 14		0 25
Liquorice, Refined	0 35		0 45
Magnesia, Carb 1 oz.	0 20		0 25
" 4 oz.	0 17		0 20
Calcined	0 65		0 75
Citrate gran.	0 63		0 75
Mercury	1 30		1 35
Bichlor	1 30		1 40
Chloride	1 45		1 55
C. Chalk	0 65		—
Nit. Oxyd	1 60		1 70
Morphia Acet	4 45		4 60
Mur.	4 45		4 60
Sulph	4 60		4 75
Musk, pure grain oz	23 00		—
Canton	0 90		1 20
Oil, Amonds, sweet	0 42		0 50
" bitter	14 00		15 00
Aniseed	4 00		4 25
Bergamot, super	6 25		6 50
Carraway	3 20		3 50
Cassia	2 80		2 90
Castor, E. I	0 15		0 15
Crystal	0 22		0 25
Italian	0 26		0 28
Citronella	1 25		1 35
Cloves, Ang	2 20		2 40
Cod Liver	1 25		1 50
Croton	1 75		2 00
Juniper Wood	0 80		1 00
Berries	6 00		7 00
Lavand, Ang oz.	0 90		1 00
Exotic	1 40		1 60
Lemon, super	5 00		5 50
ord	3 20		3 40
Orange	4 00		4 25
Origanum	0 65		0 75
Peppermint Ang	13 00		14 40
" Amer	3 50		3 75
Rose, Virgin	8 50		8 75
" good	6 80		7 00
Sassafras	0 90		1 00
Wintergreen	6 00		6 50
Wormwood, pure	4 00		6 50
Ointment, blue	0 90		1 00
Opium, Turkey	8 50		8 75
pulv	10 50		10 75

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DRUGS, MEDICINES, &c.—*Cont'd*	$ c.	$ c
Orange Peel, opt.	0 30	0 36
" good	0 12½	0 20
Pill, Blue, Mass	1 00	1 00
Potash, Bi.chrom	0 23	0 27
Bi-tart	0 33	0 35
Carbonate	0 14	0 20
Chlorate	0 55	0 60
Ni rate	10 50	11 00
Potassium, Bromide	11 5	1 40
Cyanide	0 75	0 80
Iodide	7 75	8 00
Sulphuret	0 25	0 35
Pepsin, Boudault's...oz	1 40	—
Houghton's..... doz.	8 00	9 00
Morson's.....oz.	0 85	1 10
Phosphorus	0 95	1 00
Podophyllin	0 50	0 60
Quinine, Pelletier's	—	2 45
Howard's	2 50	—
" 100 oz. case.	2 45	—
" 25 oz. tin..	2 45	—
Root, Colombo	0 13	0 20
Curcuma, grd	0 12½	0 17
Dandelion	0 17	0 20
Elecampane	0 16	0 17
Gentian	0 08	0 10
" pulv	0 15	0 20
Hellebore, pulv	0 17	0 20
Ipecac, "	1 50	1 60
Jalap, Vera Cruz	1 00	1 25
" Tampico	0 70	1 00
Liquorice, select	0 12	0 13
" powdered	0 15	0 20
Mandrake "	0 20	0 25
Orris, "	0 20	0 25
Rhubarb, Turkey	2 50	2 75
" E. I	1 10	1 20
" " pulv	1 20	1 30
" " 2nd	0 90	1 00
" French	0 75	—
Sarsap., Hond	0 40	0 45
" Jam	0 88	0 90
Squills	0 10	0 15½
Senega	0 90	0 95
Spigelia	0 25	0 30
Sal., Epsom	2 25	3 00
Rochelle	0 32	0 35
Soda	0 02½	0 03
Seed, Anise	0 13	0 16
Canary	0 05	0 06
Cardamon	2 25	2 50
Fenugreek, g'd	0 09	0 10
Hemp	0 06½	—
Mustard, white	0 14	0 16
Saffron, American	1 15	1 50
Spanish	12 00	13 00
Santonine	8 25	9 00
Sago	0 08	0 09
Silver, Nitrate.....Cash	14 85	16 50
Soap Castile, mottled	0 11	0 14
Soda Ash	0 04	0 05
Bicarb. Newcastle	—	6 50
" Howard's	0 14	0 16
Caustic.	0 06½	0 06½
Spirits Ammon., arom	0 35	0 35
Strychnine, Crystals	2 60	2 70
Sulphur. Precip	0 10	0 12½
Sublimed	0 03½	0 05
Roll	0 03	0 04½
Vinegar, Wine, pure	0 55	0 60
Verdigris	0 35	0 40
Wax, White, pure	0 75	0 80
Zinc. Chloride.....oz	0 10	0 15
Sulphate, pure	0 10	0 15
" common	0 06	0 10
DYESTUFFS.		
Annatto	0 35 @	0 60
Analine, Magenta, cryst	3 00	4 00
liquid	2 00	—
Argols, ground	0 15	0 25
Blue Vitrol, pure	0 10	0 10
Camwood	0 06	0 09
Copperas, Green	0 01½	0 02½
Cudbear	0 16	0 25
Fustic, Cuban	0 02½	0 04
Indigo, Bengal	2 40	2 50
Madras	0 90	0 95
Extract	0 30	0 35

DYESTUFFS—*Continued.*		
Japonica	0 06½	0 07
Lacdye, powdered	0 33	0 38
Logwood	0 02	0 03
Logwood, Camp	0 02	0 3½
Extract	0 10	0 14
" 1 lb. bxs	0 13	—
" ½ lb. "	0 14	—
Madder, best Dutch	0 15	0 16
2nd quality	0 12	0 14
Quercitron	0 03	0 05
Sumac	0 06	0 08
Tin, Muriate	0 10½	0 12½
Redwood	0 05	0 06
SPICES.		
Allspice	0 11½@	0 12
Cassia	0 39	0 40
Cloves	0 27	0 28
Cayenne	0 30	0 35
Ginger, E. I	0 16	0 17
Jam	0 20	0 30
Mace	1 75	1 75
Mustard, com	0 20	0 25
Nutmegs	1 15	1 20
Pepper, Black	0 22½	0 23
White	0 48	0 50
PAINTS, DRY.		
Black, Lamp, com	0 07 @	0 08
" refined	0 25	0 30
Blue, Celestial	0 08	0 12
Prussian	0 65	0 75
Brown, Vandyke	0 10	0 12½
Chalk, White	0 01	0 01½
Green, Brunswick	0 07	0 10
Chrome	0 16	0 25
Paris	0 30	0 35
Magnesia	0 20	0 25
Litharge	0 07	0 09
Pink, Rose	0 12½	0 15
Red Lead	0 07½	0 08
Venetian	0 02½	0 03½
Sienna, B. & G	0 07	0 08
Umber	0 07	0 10
Vermillion, English	1 50	1 60
American	0 25	0 35
Whiting	0 85	0 90
White Lead, dry, gen	0 08½	0 09
" " No. 1	0 07	0 08
" " No. 2	0 05	0 07
Yellow Chrome	0 12½	0 35
" Ochre	0 02½	0 03½
Zinc White, Star	0 10	0 12
COLORS, IN OIL.		
Blue Paint	0 12 @	0 15
Fire Proof Paint	0 06	0 08
Green, Paris	0 30	0 37½
Red, Venetian	0 07	0 10
Patent Dryers, 1 lb tins	0 11	0 12
Putty	0 03½	0 04½
Yellow Ochre	0 08	0 12
White Lead, gen. 25 lb. tins	2 50	—
" No. 1	2 25	—
" No. 2	2 00	—
" No. 3	1 75	—
" com	1 30	—
White Zinc, Snow	2 75	3 25
NAVAL STORES.		
Black Pitch	5 00 @	5 25
Rosin, Strained	4 50	—
Clear, pale	7 80	—
Spirits Turpentine	0 60	0 65
Tar Wood	5 50	5 75
OILS.		
Cod	0 63 @	0 65
Lard, extra	0 90	—
No. 1	0 80	0 85
No. 2	0 75	0 90
Linseed, Raw	0 76	0 80
Boiled	0 81	0 85
Olive, Common	1 10	1 20
Salad	1 80	2 30
" Pints, cases	4 20	4 40
" Quarts	3 25	3 50
Seal Oil, Pale	0 75	0 80
Straw	0 68	0 75
Sesame Salad	1 30	1 35
Sperm, genuine	2 20	2 40
Whale refined	0 90	0 95

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CANADIAN

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Original and Selected Papers.

ON THE ADMINISTRATION OF CASTOR OIL.

BY E. GREGORY.

Castor Oil is indisputably nauseous and unpleasant to take, so much so that some patients cannot be induced to swallow it, by any device or on any consideration. At the same time its qualities are such that in some disturbed states of the system no other purgative can be substituted with safety. On this account a great deal of ingenuity has been exercised in endeavouring to devise means by which the dose may be swallowed without tasting it. So far as I know, success in this attempt has been only partial, and I fear the difficulties in the way are too great to be entirely overcome. Efforts seem to have been made in three directions: first, to enclose the oil in a tasteless envelope, such as the hard and soft castor oil capsules. To these there seem to be two objections. One, from the number of capsules necessary to be taken for a purgative dose; the other from the fact that most of the makers, in their efforts to reduce the size of the dose, have been tempted to add a foreign ingredient, such

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as podophyllin, or croton oil, both of which are of so drastic a nature as to make it unwise to give them to a delicate patient. The second class of efforts have been made principally by medical men and nurses, and have consisted in floating the oil on some vehicle, such as tea, coffee, punch, wine, beer, etc., etc., The result is that the patient, in spite of the most careful management, finds some of the oil sticking to his mouth, and sinks back in the bed with the conviction impressed on his mind that oil is abominable stuff. The most successful vehicle of this kind that has come under my observation is flax-seed tea, well sweetened and flavored with any agreeable aromatic. If the oil be floated on this, and before the dose is taken, the lungs be thoroughly exhausted, so that the whole can be drunk with a deep inspiration, the taste is very little noticed. The third direction in which inventors have exercised their ingenuity in endeavoring to cover up and disguise the unwelcome flavor is by adding various ingredients to the oil, and by making it into an emulsion. Of this class are Copland's Sweet Castor Oil, which answers admirably for children, but for adults has the disadvantage of retaining its natural appearance, and of being much too thick and clammy for reasonably pleasant use. Wilson's Castor Oil Emulsion has the taste well disguised, and has a little less of the clamminess, but is open to the objection of being too thick, and there is just the suspicion in my mind that the strength may have been fortified by the addition of some more powerful purgative.

In the May number, p. 357, of the JOURNAL is an article by Mr. Herbert G. Rogerson, in which he gives a formula adapted to emulsify most oils and balsams. It certainly makes a very nice looking preparation, having a white pearly lustre, and with the taste and smell of the active ingredient very well disguised. But it is too thick and must be gulphed down.

For some twelve or fourteen years past I have used the following formula for a Castor Oil draught which has proved very acceptable to adults who could not get down the pure oil. For children it does not answer so well, the dose of necessity being double that of the oil:

℞. Ol. Ricini, ʒj.
Mucil. Acaciæ ʒij.
Shake well together, then add
Syr. Simp. ʒij.

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Shake again, then flavor with Spts. Menthæ Pip., or according to taste, and make up to two ounces with water. This mixture can scarcely be called an emulsion, but it mixes well on vigorous shaking. The taste is well disguised; it is thin enough to be easily taken from a wineglass, and it leaves no oil sticking round the mouth. I have lately obtained still better results from the following formula:

℞. Ol. Ricini, ʒj.
" Anisi, gtt x.
Chloroform, gtt x.
Shake well together, then add
Mucil Acaciæ ʒss.

Shake well and make up to two ounces of water. I know not whether this may be considered an infringement on Mr. Copland's patent, but it is a very nice looking and palateable preparation, and does not separate so speedily as the last.

LINDSAY, July 25th.

ON PAREIRA BRAVA.*

BY DANIEL HANBURY.

The botanical origin of the various stems and roots known as *Pareira Brava* is extremely obscure. By most writers the drug is referred without question to *Cissampelos Pareira* Linn., a climbing plant of the order *Menispermaceæ* growing in the tropical regions of both the Old and New World.

Some years ago the difficulty of purchasing Pareira Brava of good quality in London induced me to seek a supply in the West Indies. I accordingly procured on behalf of the firm of which I was then a member, a quantity of the stems and roots of *Cissampelos Pareira* L., collected in Jamaica, under the supervision of Mr. N. Wilson, director of the Bath Botanical Garden in that island. The first importation was accompanied by herbarium specimens of the plant, the examination of which removed all doubt as to its origin. I also obtained specimens of stems of *Cissampelos Pareira* similarly authenticated, from correspondents in Trinidad, Brazil and Ceylon.

From these materials it at once became evident that the long-accepted statement that Pareira Brava is derived from *Cissampelos Pareira* Linn. was erroneous.† In fact neither the stem nor the

* From the Pharm. Jour. and Trans.

† This fact was first pointed out in the *Pharmacopœia of India*, 1868, p. 8, *note*.

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root of the plant at all resembles any of the forms of that drug I had ever met with in commerce.

What then is the *true Pareira Brava?*—To answer this question we must look back to the early history of the drug.

The merit of having first given some account of Pareira Brava is usually conceded to the Dutch traveller Piso, who in his work *De Medicina Brasiliensi*, published in 1648, described a plant called by the Portuguese *Caapeba*, *Cipó de Cobras* or *Herva de Nossa Senhora*. Piso's figure is scarcely recognizable, but his description of fruit as resembling the catkins of hop *(semen magnum coloris rosacei, e capsulis lupulo similibus prominens)* applies well enough to a *Cissampelos*, and in fact *C. glaberrima* St. Hil. is known under these Portuguese names in Southern Brazil at the present time. My friend Mr. J. Correa de Mello, of Campinas, Prov. S. Paulo, has been good enough to send me a specimen of this plant and its root; and the latter I find to be wholly unlike any sort of Pareira Brava.

That Piso does not mention Pareira Brava was indeed remarked as long ago as 1710 *; and it is only since the drug has been supposed to be derived from *Cissampelos* that authors have identified it with Piso's *Caapeba*.

Pareira Brava was certainly first brought to Europe by the Portuguese. It first attracted general attention in 1688, when Michel Amelot, Marquis de Gournay, a privy councillor of Louis XIV., and a very distinguished political personage, brought it with him from Lisbon, whither he had been sent as ambassador by the French king. There can be no doubt that the drug was considered to possess extraordinary properties. Rouillé, the successor of Amelot in the Lisbon embassy, also took home with him to Paris some Pareira Brava; and in 1710 we find it claiming the notice of the French Academy,† who requested Etienne-François Geoffroy, Professor of Medicine and Pharmacy in the College of France, to investigate its virtues. Jean-Claude-Adrien Helvetius, a physician of great merit, who though a young man was consulted by Louis XIV. in his last days, and was afterwards attached to the court of Louis XV., tried the drug still earlier,‡ and gave strong testimony in its favour.

Both Geoffroy and Helvetius were correspondents of Sir Hans Sloane, that dilligent promoter of science whose immense collections gave origin to the British Museum,—and among the Sloanian MSS. I have found a letter of Helvetius§ addressed in 1715 to Monsieur

* *Hist. de l' Acad. Royale des Sciences*, annee 1710, 56.

† *Hist. de lAcad. Royale des Sciences*, annee 1710, 56.

‡ Helvetius, *Traite des Maladies les plus frequentes et des remedes specifiques pour les guerir*, Paris, 1703, 98.

§ Sloane MS. No. 3340, p. 291.—The letter has already been published in *Phil. Trans.* No. 346, Nov. and Dec., 1715, p. 365.

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Duyvenvoorde, ambassador from the States General to George I., a portion of which I will here quote :—

"I am extreamly pleased s^r that you have apply'd yo^rself to me "for my advice about the use of the *Pareira Brava* which has been "recommended to you, because I can give a very good account of it "haveing been one of the first that introduced it in France. I have "made abundance of lucky experiments about it which have made "this medicine very well known to me, wherefore, I assure you, you "can do nothing better than to make a tryall of it. . . . The "Pareira Brava is a root which comes to us from Brazil by the way "of Lisbon, but which the war has rendered pretty scarce; however "it is to be found among the good druggists and is sold [at] Paris "for 40 livres the pound. 'Tis called in Brazill the Universall "Medicine, and made use of there in all kinds of distempers. A "Capuchin monk who comes from thence told me he could not give "it a greater character than by assuring me that in all their voyages "they carried the gospell in one pockett and the Pareira Brava in "another. . . ."

Helvetius recommended the finely-powdered root in five grain doses, to be taken in infusion warm like tea.

Petiver, apothecary of London, and secretary to the Royal Society, an active collector of objects of natural history of every kind, whose letters are also in the Sloanian collection, thus wrote, Dec. 11th, 1716, to Colonel Worsley, His Majesty's Envoy at Lisbon:

" . . I am glad to hear y^e Brazil ffleet is safely arrived, w^ch I "hope has brought some materialls for my succeeding *Collectaneas*, "and amongst them nothing can be more welcome than specimens "of y^e leaves and fruit of y^e Ipecacuanha, Pareira Brava, Balsam, "Capevæ and y^e true Brasile and Brasiletto woods, all which will "be very acceptable discoveries. . . . ."*

The first author to give an account in print of Pareira Brava seems to be Pomet, whose *Histoire des Drogues* was completed in 1692.† He describes the drug as then recently seen in Paris, and he figures the specimen given him by Tournefort.

Geoffroy, in his excellent *Tractatus de Materia Medica*,‡ a work he did not live to complete, calls the drug by its Brazilian name of *Butua* or *Pareira Brava* of the Portuguese, and describes it as a root, woody, hard, contorted, externally of dark colour, rough with many wrinkles, some long, some running round it transversely, like that of *Thymelœa Daphne Gnidium* L.] internally of a dull yellowish hue, knit together, as it were, with many woody fibres, so that when cut transversely it exhibits several concentric circles, inter-

* Sloane MS., 3340, p. 306.

† As proved by letters of approbation which precede it. But it was not published until 1694.

‡ Tom. II. (1741) 21.

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sected by numerous rays of fibres passing from the centre to the circumference; inodorous, somewhat bitter, with a certain degree of sweetness like liquorice, as thick as the finger, or sometimes as a child's arm. He adds that the Brazilians and Portuguese most highly extol its virtues as a diuretic, lithontriptic, vulnerary, stomachic, cordial, and alexipharmic,* and, in fact regard it as a complete panacea.

The question now arises—Can the drug which was introduced with so much laudation be clearly identified?

As already stated, Pomet has figured it, and his engraving is excellent. But Sloane has left us better materials. In his collection of materia medica, now in the British Museum, there are many well-preserved specimens of the drug obtained from different persons and at different periods, *and all of one kind;* and in his voluminous manuscript catalogues and his other papers, are entries throwing light on their origin.

The first notice that I have found is a letter from Lisbon, dated October 17th 1699, and addressed by Joseph Geston to John Ellis,† in which the writer says:—

"By order of my brother W^m. Geston, I send you here inclosed "six sticks of *Pareira Brava*, or *Parra Brava*. The use of it I am "informed, is in powder, one scruple, and to the strongest patient "one octave [drachm] in Rhenish wine. . . . Its vertues are "for the stone, gravell, obstruction of the urine, and for the colick, "—a very excellent remedy."

Though this letter is not addressed to Sloane, nor is he mentioned in it. yet from its occuring among his correspondence there can be no doubt that the specimens to which he relates were intended for him.

The entries in his manuscript catalogues, which are in his own handwriting, are these:—

"652. *Pareira Brava.*—From Brasile, pretended to be "good for the stone."

"4036. *Pareira Brava.*—A root used in the stone."

"6708. The *Pareira Brava*, of a brown colour, from Brazil, "said to be best sort.—From Mons^r. Geoffroy.

* Hill judiciously remarks that this is going too far in its praise, and yet omitting some of its real virtues. "It is certainly a diuretic," he says, "of no inferior kind, and has done great service in nephritic cases; and plurisies and "quinzies has been attended with more success than almost any medicine we know "of singly. In suppressions of urine scarce anything is more efficacious or more "instantaneous in its effect, but it is folly to infer from this that it will dissolve the "stone. . . . In case of ulceration of the kidneys or bladder, when the urine "is purulent and voided with great difficulty, there is scarce anything equal to this "root as a remedy."—*Hist. of Mat. Med.* 1751, p. 600.

† Sloane MS., 4045, fol. 240.

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"10471. Sev$^{ll.}$ specimens of the *Pareira Brava*, from "Lisbon, accounted a great remedy in suppression of water "and the stone,—according to Mons$^{r.}$ Geoffroy, the *Ambitua* "or *Butua* of Zanoni.—From Dr. Fuller, Sevenoaks."

In 1866, I applied to my friend Theodor Peckolt, druggist, of Rio de Janeiro, then residing at Catagallo in the same province, on the subject of Pareira Brava, in consequence of which I received from him two specimens of two plants, the one market *Butua* or *Pareria Brava legitima*, the other *Butinha* or *Pareria Brava miuda* (literally *small Pareria Brava*), together with a large dried entire plant of the former. The herbarium specimens of these plants presented no characters by which I could distinguish them as two species; and Mr. Peckolt subsequently informed me that their difference consists chiefly *in habit*, and that the first or *legitimate* Pareira Brava is found in much drier situations than the small sort or *Pereira Brava miuda*.

I have also received specimens from my friend Mr. J. Correa de Mello of Capinas, marked *Parreira Brava pequena (small Pareira Brava)* or *Abuta pequena*, and others labelled *Leaves of the plant producing Pareira Brava*, all of which seem referable to Mr. Peckolt's plant. Mr. Correa de Mello has likewise sent me the dried root, and I have also received the root as supplied by a drug house of Rio de Janeiro.

Within the last few weeks two specimens of roots bearing some leaves, marked respectively *Pareira Brava, large leaf*, and *Pareira Brava, small leaf*, have been presented to the Pharmaceutical Society as well as to myself by Mr. G. B Francis, of the firm of Hearon, Squire, and Francis. Between these two sorts I fail to recognize any difference.

The roots of Mr. Peckolt's *Pareria Brava legitima*, those sent me by Mr. Correa de Mello, and those received from Mr. Francis, completely agree with Sloane's specimens, as well as with Pomet's figure.

As to the plant, I identify it with *Chondodendron* tomentosum* or Ruiz et Pavon, with an authentic specimen of which in the herbarium of the British Museum I have compared it. It is the *Cocculus Chondodendron* of De Candolle (Pro. I. 98), and has been figured as *Cocculus(?)platyphylla* by Auguste de St. Hilaire,† and by Eichler,‡

* Mr Myers *(Contributions to Botany*, III., 307) contends for this name being written *Chondrodendron* as more in accordance with its derivation. But I think it safer to retain the original spelling as accepted by all botanists.

† *Plantes Usulles des Brasiliens*, pl. 42.

‡ Martius, *Flor. Bras.*, fasc. 38, tab. 48. Eichler makes *two* species under the name of *Botryopsis*, Miers *eight*, six of them being apparently forms of *Ch. tomentosum*. Mr. Mier's species as named by himself, can be seen in the British museum, and a type-specimen of the plant figured by Eichler in the Kew Herbarium.

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as *Botryopsis platyphilla* Miers. It agrees well with the plate of *Cissampelos Abutua* in Vellozo's *Flora Fluminensis** with which Eichler doubtfully identifies it.

Chondodendron tomentosum has been found in various parts of Brazil where it is known as *Butua* and *Abutua*. Its raceme of large oval berries, exactly like a bunch of grapes, is another evidence that it is the plant which the old Portuguese colonists called *Pareira Brava* or *Wild Vine*.† Neither the fruit nor the foliage of *Cissampelos Pareira* have anything about them suggestive of a grape vine.

(To be continued.)

ADULTERATION OF VARIOUS ARTICLES OF FOOD.‡

Tea.—There are two chief classes of teas—the green and black varieties. Under the first head are included the Hysons, Twankay, and Gunpowder; and under black teas, Pekoe, Souchong, Congou, and Bohea. Both classes are subject to many serious adulterations at the hands of the exporters, and again on arrival in Europe. Mixtures of different kinds of tea are legitimately made in the course of trade for the purpose of suiting special tastes; but inferior varieties are often dishonestly mixed with the more costly kinds in order to increase profits. Leaving aside the consideration of "tea-mixing," we find that to green and black teas have often been added the leaves of other plants. Those of plum, sloe, ash, willow, poplar, hawthorn, beech, plane, orange, elm, horse chestnut, elder, and oak have been detected. These leaves are dried and prepared by roasting and "facing" so as to resemble genuine tea very closely. The product is sometimes called "Maloo mixture." Facing is used for the purpose of coloring the leaves and increasing weight. The bodies employed are China clay, gypsum, chalk, French chalk, black lead, Prussian blue, indigo, chromate of lead, carbonate, and even arsenite of copper, Venetian red, and fine white sand. The powders are attached to the leaf surface by a convenient adhesive material. Spent (exhausted) tea-leaves are often dried, colored with catechu and an iron salt, then faced, and the product mixed with good tea, "Maloo mixture," or Lie tea. The last-named substance is made up of the tea and other leaves, sand, or plaster of Paris, bound together by starch or gum, so as to form granular particles that can be "faced," so as to resemble black or green gunpowder. *Genuine*

* Tom. X., tab. 140. Mr. Myers regards this to represent his *Abuta macrophylla*, a very different plant.

† In Portuguese the word is written *Parreira*, and signifies a vine that grows against a wall or over an arbour. *Parra* is a vine-leaf.

‡ From the London Medical Record, in New Remedies.

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tea, when placed in a muslin bag and kneaded in warm water for a few minutes, should not give up any powder, quickly subsiding when the water is allowed to stand.

Coffee.—Chicory, acorns, sawdust, roasted roots of various kinds, and grain, tan, groats, lentil seeds, baked livers, Venetian red, burnt sugar. Admixture with chicory is allowable if the compound be truly labelled. *Genuine Coffee* should not cake when pinched between the fingers. When a little is thrown on cold water it floats, and very slightly tinges the water. Adulterated coffee sinks and rapidly colors the water brown.

Cocoa.—Chicory, cocoa-husk, fats, starches, sugar, Venetian red, bole. *Genuine cocoa* should not have a sweet taste, nor red color. As much cocoa as can be piled upon a threepenny piece, when placed on a square of platinum foil and strongly heated by a spirit-lamp flame, should burn almost completely away, leaving a very minute quantity of reddish-colored ash.* The same remarks apply to *chocolate*.

Sugar.—Fine white loaf sugar is rarely adulterated, but colored sugars sometimes contain chalk, sand, clay, starch, sugar, flour, dextrine, plaster of Paris: as impurities, fragments of cane, molasses, vegetable albumen, and sugar-mites or acari. *Good Sugar* should be free from the least bitter taste, and ought to dissolve completely in water. Loaf-sugar should give a perfectly clear and colorless solution; brown sugar a clear but colored liquid. If insects be present they float on the syrup, and appear as small specks, which can be easily removed for microscopic examination. *Bon-bons*, unless when mixed with harmless starch or injurious white or colored mineral powders, produce clear solutions when dissolved in water. If any insoluble residue be left, the deposit should be allowed to settle, the liquid poured carefully off, and the powder collected, dried, and heated on platinum foil. If white and wholly combustible, it probably consists of starch. Chromate of lead (yellow), arsenite of copper (green), china clay and gypsum (white), and most other injurious mineral pigments give insoluble and fixed powders. Sulphide of mercury or vermillion, though volatile when heated on platinum foil, is easily recognized by affording a heavy red powder on treatment of the sweets with water.

Milk.—The chief is undoubtedly water; but skim-milk, annatto, brains, chalk, gum tragacanth, and other gums; sugar, decoction of white carrots, starch, and turmeric, are stated to be used occasionally. *Good milk* should be free from acidity, and when allowed to stand in a vessel ought not to deposit solid matter. When placed in a tall graduated glass cylinder, it should throw up at least 10 per

* The microscope is alone able to detect mixtures of many organic bodies, as starches, fats, chicory, etc., in this and other cases. The simple tests given usually serve simply to exclude injurious substances.

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cent. of cream after standing for twelve hours. This is on the whole the least objectionable rough test that can be used.

Butter.—Water, much salt, starch, flour, dripping and lard. *Good butter* should not have a rancid smell. When a quantity is melted and poured into a small narrow phial, and the latter allowed to stand near to a good fire, the milky layer of water that falls to the bottom of the bottle should not form more than one-tenth of the total bulk of fluid. When the melted butter is poured off, the water should not strike a blue color when shaken with a drop of tincture of iodine.

Bread.—Water, rice, potato, and other starches, salt, alum, bone-dust, clay, carbonate of magnesium, chalk, gypsum, and sulphate of copper; or impure from bad flour. *Good bread* is sweet and agreeable to the taste. It does not present a mouldy appearance, and ought not to give a thick liquid when steeped in water. If bread become soft and sodden on standing, it is probably adulterated with rice. When a piece containing much alum is dipped in a very weak solution of the coloring matter of logwood, the bread is quickly dyed of a purple tint. Good bread ought not to contain more than 38 per cent. of water, and should burn to a very minute ash when heated on platinum foil.

Flour (Wheaten).—Rice, barley, dari, bean-flour, "cones" flour, Indian corn, rye, potatoes, alum, gypsum, clay, ergot, darnel. *Good flour* should not be acid or musty, but ought to have a pleasant flavor. When a small quantity is burnt on platinum foil (see Cocoa) a scarcely perceptible residue of mineral matter should remain. As flour containing ergot is poisonous, it is a matter of importance to be able to distinguish this dangerous product of disease in the wheat. We can accomplish this easily by shaking up the suspected flour with a mixture of one part of chloroform and six parts of strong spirit of wine. The ergot, if present in the flour, will float on the liquid and form a brown scum.

Arrowroot (West Indian).—Potato-starch, sago-meal, rice, gypsum, china clay, chalk. *Genuine Maranta Arrowroot* is a dull white powder, which crackles strongly and in a peculiar manner when pressed between the fingers. When mixed with twice its weight of strong hydrochloric acid, it yields an opaque jelly. Potato-starch, under similar circumstances, affords a transparent jelly. When burnt on platinnm foil, arrowroot should leave a scarcely perceptible residue if adulterated with mineral powders. A fragment of iodine placed on a warm plate near to the sample, colors Maranta arrowroot chocolate brown, sago-starch yellowish, wheaten-starch violet, and potato-starch a dull lilac color.

Isinglass.—Though the best, or Russian isinglass, is an unimportant article of food, it may be well to mention that it is sometimes adulterated with gelatine and with inferior Brazilian isinglass. *Genuine Russian Isinglass* occurs in opaque white filaments, which

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do not become transparent when placed in water, nor do they swell to a material extent. Gelatine, on the contrary, becomes transparent, and swells considerably. Russian isinglass affords a firm, translucent jelly; the Brazilian variety, for corresponding weights of material and water, does not afford nearly so firm a jelly, and it is much more milky.

Vinegar.—Sulphuric acid, and other mineral acids, water, "grains of paradise," chillies, corrosive sublimate (?). Arsenic and copper as accidental impurity. *Unadulterated Vinegar* is allowed by special enactment to contain one-thousandth of oil of vitriol. When paper moistened with vinegar containing this proportion of sulphuric acid is dried before the fire, no charring takes place until the paper is rather strongly heated; but if the proportion of acid be much greater, blackening results before the paper seems quite dry. It must be remembered that this is but a very rough and indecisive test. When a piece of clean and bright copper wire is immersed in vinegar, diluted with a little water, and heated nearly to boiling in a glass vessel, the copper quickly loses its color and assumes a leaden hue if arsenic or mercury be present. Copper may be detected in a fresh sample, much diluted with water, by means of the steel needle, as described under *Preserved Fruits.* Pungent substances, "grains of paradise," for example, may be detected by evaporating a quantity of the vinegar nearly to dryness in any convenient porcelain vessel. The residue should not have a very fiery taste.

Mustard.—Ordinary mustard is rarely free from admixture with one or other of the varieties of flour, turmeric being added to improve the color. The addition of flour in moderate proportion may be permitted on the score of convenience, but turmeric should not be added. For flour, china clay, plaster of Paris, or chalk have been substituted, the coloring material being yellow ochre, or even the poisonous chromate of lead. *Mustard* should not become brown when moistened with a little "spirit of hartshorn," and when burnt on platinum foil should leave but a small quantity of a nearly white ash.

Cayenne Pepper.—Dense flours or starches, mustard, turmeric, ochre, vermilion (?), red lead. *Cayenne*, when shaken with cold water, the mixture allowed to stand for a minute, and the liquid poured off, should not leave any heavy red powder at the bottom of the vessel. It ought to leave but little ash when burnt on platinum foil.

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DETERMINATION OF POISONOUS VEGETABLE SUBSTANCES FOR FORSENIC INVESTIGATIONS.*

The writer proposes chloroform as a very important and easily applicable test reagent for distinguishing between the various vegetable alkaloids. From solution in sulphuric acid the following substances are gradually withdrawn by repeated agitation with chloroform :—caffeine, theobromine, colchicine, thebaine, papaverine, narcotine, and picrotoxine. From the same solution. after neutralizing with an alkali, chloroform withdraws immediately and completely, in the cold, strychnine, chinine, cinchonidine, cinchonine, caffeine, theobromine, emetine, atropine, hyoscyamine, aconitine, veratrine, physostygmine, narcotine, codeine, thebaine, nicotine, coniine ; and more slowly, brucine, colchicine, and paverine ; sabadilline only when warmed ; and narceine in smaller quantities. Morphine and solanine are not withdrawn by chloroform from either an acid or alkaline solution.

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In order to apply the alcohol test, the object is to cut up, warmed to 75° C., heated with water containing sulphuric acid, and the solution digested at that temperature; the insoluble residue is pressed off, and repeatedly extracted with warm water. The acid extracts thus obtained are nearly neutralized by bicarbonate of soda till only a slight acid remains, and then evaporated in a water-bath to a thin syrup. This is mixed with four times its volume of 90 per cent. alcohol, and, after twenty-four hours, warmed to 40° or 50° C., filtered off, and the residue extracted with alcohol. From the alcoholic extract the alcohol is then completely distilled off. The residue of distillation is filtered, chloroform added, and then ammonia, till there is a distinct alkaline reaction, and the solution is then repeatedly agitated. The chloroform solution is then separated, and the alkaline fluid extracted with fresh portions of chloroform, until no residue is left on evaporating a small portion of the liquid. The alkaline fluid is in the meantime placed aside, and all the chloroform solutions several times agitated with fresh portions of water containing sulphuric acid. The chloroform is separated from the sulphuric water, the latter neutralized with ammonia, and then shaken again several times with chloroform. The chloroform solution now obtained is passed through a filter moistened with chloroform, washed with chloroform, and evaporated. The residue that remains behind is tested for all those alkaloids which have been mentioned above as being extracted from an alkaline solution by chloroform. The alkaline aqueous fluid that was placed aside is treated with a fresh quantity of chloroform and dilute sulphuric acid till it becomes acid, again

* Abstract of a paper by Dr. Joseph Nowak in the ' Sitzungsberichte der kais. Akademie der Wissenchaften ' of Vienna, translated in the Pharm. Journ. & Trans.

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agitated with chloroform, and the chloroform separated and evaporated. Any picrotoxine that may be present and the remainder of the colchicine remain in the residue. On the now acid aqueous fluid is poured a stratum of amyl-alcohol, the solution made alkaline with ammonia, and shaken, the amyl-alcohol taken off, filtered, and evaporated; all the morphine, digitaline and solanine, and the greater part of the remainder of the sabadilline, narceine, and picrotoxine will be found in the solution; in the residue after evaporation, a small quantity of the narcotine, caffeine, papaverine, theobromine, digitaline and colchicine. The first extract with chloroform is now evaporated, the residue repeatedly extracted with warm water containing sulphuric acid, the acid fluid neutralized with ammonia and agitated with chloroform. The remainder of the substances will remain, after evaporation of the chloroform.

Dr. Nowak also gives the following reactions resulting from the application of concentrated sulphuric acid:—

Of the poisonous substance of which an analysis is required a small quantity is placed on a watch-glass, and one or two drops of chemically-pure sulphuric acid added. The results obtained may classify the substances into six groups, as follows:—

1. The substance remains colorless: chinine, cinchonine, morphine, strychnine, caffeine, theobromine, codeine (coniine, nicotine), atropine.

2. A yellow color of different shades ensues: chinidine, colchicine, emetine, narcotine, aconitine, picrotoxine, solanine, veratrine, sabadilline.

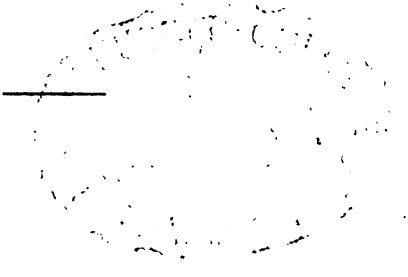
3. The substance become rose-red: brucine.

4. It becomes first red, but is very soon dissolved with a yellow color: thebaine.

5. A violet color results: papaverine.

6. Various shades of brown are produced: delphinine, narceine, digitaline.

The paper includes also instructions for a variety of other useful tests to determine the presence of the particular alkaloids.



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NOTE ON THE EXHIBITION OF RESIN OF COPAIBA.*

BY A. W. GERRARD.

Dispenser, and Teacher of Pharmacy, University College Hospital.

The above resin has been recently introduced to the notice of the medical profession by Dr. Samuel Wilks as possessing therapeutic advantages over the balsam, and likewise as being more agreeable for the patient to take. In a letter to the *Lancet* of June the 21st, Dr. Wilks, in reply to numerous inquiries that had been made as to the best method of dispensing it, gave the following formula which had been recommended by me, and was used in the dispensary of Guy's Hospital:—

Take of—

Resin of Copaiba	180 grains.
Rectified Spirit	5 drachms.
Spirit of Chloroform	1 "
Mucilage of Acacia.....	2 ounces.
Water to	12 "

Mix according to art.

These ingredients, when mixed in their proper order, form a mixture which, although it contains the resin in a fine state of division, I did not consider altogether satisfactory, as after standing a day or two the resin collects at the bottom of the bottle, forming a semi-compact mass which is shaken apart with difficulty. With the view of overcoming this objection, I made experiments with various other substances and obtained the best result in the following:—

Take of—

Resin of Copaiba	15 grains.
Compound Powder of Almonds	30 "
Water to.....	1 ounce.

Rub the resin with the powder until well incorporated, then add the water after the manner of forming an emulsion.

This forms a cream-colored emulsion of a very satisfactory character, having but a faint odor of copaiba. This may be removed by the addition of compound tincture of lavender, which at the same time imparts and agreeable pink tinge.

The emulsifying power of the powder of almonds is undoubtedly due principally to the fixed oil it contains, which acts as a solvent of the resin; the action is also assisted by the gum and sugar. For the use of hospital dispensers and others who may have frequent occasion to dispense it, it may be kept in a concentrated form, 1=4.

* Phar. Jour. & Trans. No. 161.

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THE OPIUM TRADE WITH CHINA AND ITS PROSPECTS.*

It is now exactly one hundred years since the East India Company embarked in the opium trade with China. Previously the only opium exported into that country was conveyed thither by the Portuguese from Turkey, and the annual consumption did not exceed 200 chests per annum, it being used strictly for medicinal purposes. The drug, despite official prohibition of its use, slowly but surely advanced in favour as an intoxicant until, as is well known, it is now an article of almost general consumption. Vigorous measures have from time to time been adopted by the Chinese Government to curtail its use, and the war of 1839 was the outcome of repressive action. The British merchants of Canton refused to send away the "receiving ships," and, as a consequence, were imprisoned until the whole of the drug in Chinese waters, amounting to 20,000 chests, and valued at about 3,000,000*l* sterling, was given up to the authorities, and by them thrown into the sea. The Chinese were made to pay dearly for this outrage; but it needed two other wars, as well as the moral impression produced by the sack of the summer palace and the fall of Pekin, to induce the Government to legalize the introduction of the drug. Lord Elgin's treaty placed the trade on a secure footing, and it has since yielded to the Indian revenue a splendid but precarious return. It has never been controverted that a *bona fide* and general demand for the drug existed and still exists among the Celestials, and the efforts of a paternal government to dictate to its subjects what tastes they may indulge in seem misdirected and unjustifiable. After having opened up and at some risk maintained a market for the opium of our Indian empire, we are naturally deeply interested in anything that may affect our interests in that direction. The increased and increasing production of the drug in China is therefore to us a matter of some moment. The old Chinese custom of forbidding the people to grow the poppy is still kept up; but a report of our consul at Hankow gives a good reason why the prohibition is everywhere disregarded. Proclamations, he says, are of course continually being issued by local magistrates, exhorting people to cultivate cereals and abandon opium for more useful crops; but as the officials are the chief consumers of the drug, and in addition derive a considerable revenue therefrom, these proclamations are intended only as a means of extorting more money from the cultivators. In the great western province of Szechuen we learn that nearly "half the land" is appropriated to the culture of the poppy, and even in the south-western provinces of Yunnan and Kweichoo, which have been wasted by a Mahomedan rebellion for some years,

* From the Chemist and Druggist.

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the production is very considerable. It pays the producers so well that its cultivation steadily increases, and has now, moving eastwards, invaded the provinces of Honan and Hoonan, in the centre of the empire. From the irregular manner in which the Chinese levy their land dues it is quite impossible to arrive at a correct estimate of the production. It may be estimated roughly, however, as varying from 50,000 to 80,000 piculs (say 3,937,500 to 6,300,000 lbs). The British Consul at Shanghai anticipates that the rapidly-increasing growth of the native poppy will have a most disastrous effect upon the importation from India, for although the consumption in China increases year by year, yet year by year so does the cultivation of the poppy increase, and as this native drug is far cheaper than the Indian, it is thought that the latter will be eventually driven out of the market, unless it can be put into consumers hands at a reduced price. This is probably an extreme view to take of the case, but nevertheless it is quite clear that the "placing" of our vast Indian production is jeopardized to a considerable extent by the "home supplies." As regards quality, however, the native growth is at present much inferior, and can by no means compete successfully with Indian opium. The evidence of Mr. Caine, our consul at Hankow, on this point is confirmatory of this conclusion.

Situated midway on the navigable source of the Yiang-tse-Kiang, in the very heart of China, Hankow is the central depot in the interior of the country for opium imported in foreign steamers, and it is also the first great inland port at which the Indian opium coming from the sea-coast is brought into competition with the native drug grown in the western provinces of China, and carried down the great rivers for consumption in the other parts of the country. Thus Mr. Caine enjoys peculiar opportunities for observing the course of trade and ascertaining what are the chances of native beating the foreign drug out of the market, and his report to the Government of India is more hopeful than that of his brother official at Shanghai. He says "the native article is consumed by the poor exclusively, as inferior teas are in England." We are, moreover, informed that the drug grown in the province of Yunnan of especial excellence is supplied largely to the conterminous province of Hoonan, which is, nevertheless, the largest importer from Hankow as a centre of the foreign drug. This is a significant fact, and proves the conclusion arrived at, "that the best native opium, under the most favourable circumstances, is unable to compete successfully with the more tasty foreign article."

It is just possible that we may attach undue importance to the culture of the poppy in China, but the extension of that culture certainly justifies some degree of uneasiness. Next to the land, opium is the most lucrative source of the Indian revenue, bringing in over 6,000,000*l* per annum, and any circumstance which tends to

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render its great market insecure or uncertain demands vigilant attention. We trust, therefore, and believe, that the Government of India will adopt such measures as will ensure its being reliably informed at short intervals of the progresss of opium production in the Celestial empire. Although we may be powerless to prevent, it is none the less desirable to confront disagreeable eventualities.

VARNISHES.

By varnish we understand a liquid of an oily or resinous nature employed for coating various objects, the thin film becoming dry and hard, protecting the object on which it is laid from the action of air and water, and at the same time imparting a glossy and shining surface. We distinguish oil and spirits varnishes. Oil varnishes are usually prepared from linseed oil, but sometimes, especially for artists' purposes, poppy seed and walnut oils (so called dry oils) are used. Linseed oil, (raw) becomes slowly converted by the action of the air into a tough, elastic, semi-transparent mass ; but this property is possessed in a far higher degree by the so-called boiled oil, that is to say—an oil which has been brought by the action of heat and of oxidising materials into a state of greater activity, in fact—into a state of incipient slow oxidixation, the result of which is the formation of the substance termed by Dr. G. J. Mulder linoxine, which in many of its properties corresponds to caoutchouc. The drying of oil varnishes is not therefore due to evaporation (leaving, as is the case with alcohol varnishes, a coherent film of resin,) but to the oxidizing action of the oxygen of the air, whereby a coherent film of linoxine is formed. Linseed oil (raw) is converted into what is termed varnish by heating the oil with certain substances which more or less readily give off oxygen, while these substances also act upon the elaine, palmitine, and myristine of the linseed oil. The substances with which raw linseed oil is boiled are litharge, oxide of zinc, and peroxide of manganese. It is certainly preferable to carry this operation into effect upon the water bath, or at least with vessels provided with steam jackets. The oxides are employed in coarse powders, which are suspended in a linen bag in the oil. In practice 1 part of oxide of zinc or litharge is taken to 16 parts of raw oil ; and of the manganese 1 part to 10 of oil ; the oxides become partially dissolved in the oil, while they aid in converting the palmitine, &c., (not linoleine,) into plaster, (lead or zinc soap). Boiled linseed oil usually contains from 2.5 to 3 per cent. of litharge dissolved. Neither the addition of sulphate of zinc nor such absurdly added substances as onions, bread crust or beet root have any result whatever. Linseed oil intended to be mixed with zinc white should not be boiled with litharge, but with peroxide of manganese. The lower the

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temperature at which linseed is boiled the brighter its color. Mulder found that when raw linseed oil, especially if old, was kept from 12 to 18 hours at a temperature of 100° it acquired the property of boiled oil. Sometimes, after boiling, linseed oil is bleached by exposing it in shallow trays 10 centims. deep, best made of sheet lead, covered with sheets of glass, to the action of strong summer sunlight. Liebig's recipe for making a bright varnish is the following: To ten kilos of raw linseed oil are added 300 grms. of finely pulverized litharge, after which there is added a solution of 600 grms. of acetate of lead; the mixture is vigorously stirred, and after the subsidence of the materials the clear varnish is ready for use. Borate of manganese is, according to Barruel and Jean, an excellent so-called siccative (dryer) when added to raw linseed oil, 1 part to 1,000 of oil. Mulder's experiments comfirm this statement in every respect.

GOLD SIZE.—This is used in gilding for fixing gold leaf on wood paper, &c., and consists of a solution of linseed oil and lead plaster in oil of turpentine, prepared by first saponifying linseed oil with caustic soda or potassa, and precipitating the aqueous solution of the soap with a solution of acetate of lead, the lead soap thus formed being next dissolved in oil of turpentine.

Lemon Kali.—

Take of bicarbonate of soda.
Tartaric acid, of each, ʒ ijss.
Sugar (white), ʒ xi.

All to be in the state of a fine powder. and separately dried by a gentle heat, after which they are mixed together and flavored with oil of lemon, 10 drops, and otto of rose 1 drop. Passed through a sieve and put into dry bottles well corked.

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Editorial.

THE COUNCIL MEETING.

From the minutes of the meeting, published in this number of the JOURNAL, it will be seen that the new Council has formally organized, and has entered upon the duties and responsibilities which have devolved upon it, and which, during the somewhat lengthy term of office, extending over the next two years, will continue to demand the time and attention of our pharmaceutical executive.

The result of the election of officers gives, with two exceptions, an entirely new set of officials. This applies to members of the Council as well as those who do not belong to this body, but who are paid servants thereof. A seat in the Council, rendered vacant by the resignation of Mr. Hodgetts, the new Registrar, is filled by Mr. Love, who ranked fourteenth on the voting list. We think this plan of filling vacancies to be a good one, and much better calculated to fulfil the wishes of the majority of the members of the College than any election by the members of the Council could possibly do, if such intimation were disregarded. In the event of any amendment to the Pharmacy Act, or by-laws, we think this should be borne in mind; and, in any case, the precedent now offered might be taken advantage of as affording a sure and just basis upon which the filling of seats, rendered vacant by death or resignation, might be effected in accordance with the views of the majority.

The Mason outrage was brought up for discussion, but nothing was elicited with which our readers have not already been made acquainted. The explanations of the Registrar will be found in the official report.

The matter of dealing with defaulters remains precisely as it was; although the disposition of the Council appeared to be in favor of summary measures, it was pointed out that, at the previous meeting, a resolution of a rigorous character had been passed, but had not been carried into effect. It was thought sufficient to call the attention of the new Registrar to this resolution, and to direct him to act promptly, in accordance with its provisions. As this

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measure may have been lost sight of by our readers, it may with benefit be transcribed: "That inasmuch as a number of persons have, either through inadvertance or neglect, omitted to renew their registration fee for the present year, and that the Council are unwilling to take severe steps to enforce this duty without giving due warning of the consequence of such neglect, the Registrar be instructed to notify such parties, that, unless such fee be paid within 14 days from the date of receipt of letter, proceedings will be taken in accordance with the 25th clause of the Act, and that the Registrar be instructed to carry out this resolution." It is to be hoped that the energy of the Registrar will be early applied to this matter, so that this prolific cause of dissatisfaction may be at once removed.

A committee to amend the Pharmacy Act was appointed, and have much work before them. There are several important omissions in the original measure, and the workings of the College during the past two years have rendered obvious many points which might, with great advantage, be embodied in an amended Act. On behalf of the Committee we would request that parties having suggestions to make, send them to us for publication, so that they may be freely discussed before being presented to the committee.

It was proposed that a by-law of the College, touching the duties of the Registrar, be amended, and notice of motion was given to that effect. The purport of this addition will be that, the Registrar preserve and present to the Council, at each sitting, the papers and credentials relating to the qualifications of persons whom he may have registered during the interval between the Council meetings. This is an important matter, and, if properly and carefully carried out, both by Registrar and Council, will prevent the recurrence of certain irregularities which have taken place, and which so long as the former lax system is pursued cannot fail to recur.

THE EXAMINATIONS.

The fifth semi-annual examination for certificates of proficiency was held on the day preceding the council meeting. Out of twelve candidates nine succeeded in passing. It will be remembered that prizes were awarded to the two competitors who are foremost on the list. In the present case the first prize was taken by Mr. J. H.

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C. Fisher of Bobcaygeon, whose marks numbered 81½, and the second prize by Mr. W. R. Carmichael of Toronto, who was credited with 80¾ marks.

For the purpose of ascertaining the degrees of proficiency shown by the candidates at the various examinations, we have looked up the details, and tabulated them as follows:

Date.	No. of Candidates.	No. Passed.	Highest No. Marks.	Average.
Aug., 1871	5	3	74.00	72.00
Feb., 1872	10	8	91.00	79.00
Aug., 1872	16	12	99 50	73.80
Feb., 1873	13	10	90.25	78.90
Aug., 1873	12	9	81.50	68.52

From this we find that the degree of proficiency as shown by the average number of marks, was, at the last examination, lower than any other occasion. The first prize was also carried off with a fewer number of marks than at any previous occasion, except at the first examination. The tempting number of 99½ marks out of a possible 100, gained at the third examination, by Mr. Maclagan of Lindsay, still remains unsurpassed, and will, indeed, be difficult to excel. The total number of students examined since the organization of the Board is 56. Of these 42 were successful, so that we have an average of about 1 out of 5 to represent the unfortunate "plucked."

The questions given at the last examination are reproduced for the benefit of intending candidates, who may thus gain a knowledge of the scope and direction of the studies in which they will be tested.

Pharmacy.

1. How many minims in an imperial gallon? and how many troy grains in an avoirdupois pound?
2. Explain briefly the principles of Filtration, Maceration, Percolation and Distillation.
3. Give the composition, properties, and doses of three different Pills of the British Pharmacopœia.
4. Give formula, dose, and action of Pulv. Ipecac. Co.
5. In what form does iron exist in Mist. Ferri Co.? What alteration takes place in appearance and constituents on keeping? State the cause and remedy.
6. Give an outline of the process for preparing Morphia? Name the principal salts of this alkaloid. Give the properties and doses.
7. Give the names of antidotes for Arsenious Acid, Strychnia, and Oxalic Acid.

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8. Name the ingredients (with proportions) in five of the more important narcotic and sedative tinctures.
9. Give mode of preparation and dose of Liq. Bismuth.
10. Recognize samples of preparations.

Practical Dispensing.

1. Mrs. Smith.

℞	Ol. Terebinth	℥i	
	Aq. Flor. Aur	℥ss	
	Aq. Pur.	℥i	
	Mucil. Acac.	℥ij	
	S. V. R.	℥ij	M. S. A.
	Sig. ℥ij ter die.		

2. ℞ Pulv. Jalapæ ℥ss
Hyd. Subchlor gr. vi M.
Div. in Chart iij.
Sig. cap. ij, vel iij, ut ad sedes necesse sit.

3. Mrs. Jones.
℞. Ol. Carui gtt. iss.
ft. pil. sec. art. Mitte xij
Sig. St. j ter die ante cibum.

Materia Medica..

1. What is Glycerine? How obtained experimentally and commercially?
2. Where and how is Nitrate of Potash obtained. and what are its properties and uses?
3. Define Gums, Gum Resins, Resins, and Balsams, so as to show where they differ, giving an example of each.
4. What available Emetics are there? Give doses.
5. What is the chief source of Ammonia? Name four important preparations, giving properties and doses.
6. How would you distinguish Calomel from White Precipitate?—Quinine from Cinchonine?—Chlorate of Potash from Chloride Potassium?—Phosphate Lime from Hypophosphite of Lime?
7. What is Arrowroot? Where and how obtained? Name the varieties in use.
8. Give officinal names for Gamboge, Indian Hemp, Iceland Moss, Hemlock Leaves, Blue Vitriol, Copperas, Rhatany Root, Musk, Gun Cotton, Canada Balsam.
9. How would you determine the commercial value of Cinchona? What per centage of alkaloids would constitute a fair sample?
10. Give common and officinal names of samples.

Chemistry.

1. In what proportions does Oxygen combine with Iron, and how are the salts of the different oxides designated?

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2. Hydrogen—What are its properties and specific gravity? Give a mode of obtaining it, and some of the more important compounds into which it enters.
3. Explain the terms Amorphous, Isomorphous, Dimorphous, and Chemical Affinity.
4. Give the atomic weights of Mercury, Iodine, Iron, and Lead; also their chemical symbols.
5. What is the cause of effervescence when acid and alkaline Seidlitz powders are mixed in solution.
6. How would you determine the specific gravity of a powder—say Sugar?
7. Name four double salts used in Medicine, giving their composition.
8. How is Nitrous Oxide prepared for use?
9. Give formula and test for Hydrocyanic Acid. State the strength of the commercial article, how estimated.
10. Explain the respective action of the common disinfectants in use.

Botany.

1. From what sources do plants derive their nourishment?
2. Describe or sketch an obovate auriculate leaf, also a perfoliate ovate serrate one.
3. Explain the meaning of exotic, indigenous, and introduced, as applied to plants.
4. Give an example of a pubescent plant.
5. What do you understand by the terms succulent, herbaceous, woody?
6. What is cellular tissue?
7. Name the parts of the flower and their office.
8. Give description, habitat, and properties of sample plant.
9. What are the functions of the root?
10. Give common name, habitat, and description of Hepatica triloba.

Prescriptions.

The following prescriptions were given for translation and correction:

1. ℞ Ol Cubebæ ʒij
   Tinct. Buchu ʒiv
   Spts. Eth. Nit ʒss
   " Lavand. Co. ʒij
   M. ft. Mist, cujus sumat cochl. min. bis. vel. ter in die.

2. ℞ Vin. Ipecac ʒi
   Antim. Potassio Tart. ʒii
   et fiat potio.

3. ℞ Ung. Simpl ʒij
   Acid Tannici ʒij
   Pulv. Opii ʒi
   M. bene, more dicto nocte maneque si opus sit utendum.

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4. ℞ Hydrarg. Chlor. gr. xii.
Conf. Rosæ q.s.
Ut fiat pil xi, quarum sum. j, post cœnum.

5. ℞ Tinct. Opii ℥i
Syr. Croci ℥i
Tr. Cardam. Co. ℥ii
Aq. Cinnam. ℥vi

6. Write out No. 1 in full Latin words.
7. Point out errors in Latin in the following:
"Sumatur pillulas duo omne nocti."
Give reasons for the alterations.
8. Write a Latin Prescription for a four-ounce mixture to contain four doses of 20 grs. chloral, with syrup tolu and cinnamon water. One-fourth to be taken at bed-time, and repeated in an hour if sleepless.
9. Write the following in full in Latin and English:
℞ Haust. Nig. ℥iv
Sig. ℥i, mane sumd. augeatur dosis s. o. s.
M. cochl: exhib. disique iteretur prout urg. morb.
10. Write a prescription in the usual form for an 8 oz. mixture, to contain in each dose

Compound Syrup of Squills	½ drachm.
Camphorated Tincture Opium	15 drops.
Syrup Tolu	20 drops.
Iodide Potassium	3 grains.

Peppermint water to make up the quantity desired. Dose, half a tablespoonful three times a day.

Victoria Medical College.—The new building, in which this school is now located has been found fully equal to the expectations which were entertained at the time of its erection. For internal convenience, for a comfortable well-lighted theatre and dissecting room, the building is unsurpassed on the continent. The comfort of students is secured in having the rooms well warmed, ventilated, and lighted by gas. The laboratory is pleasantly situated, has abundance of light, and communicates by folding doors with a lecture room. Here, students have every necessary opportunity of acquiring a knowledge of practical chemistry.

The attention of the Medical Students is especially directed to the fact that the certificates of attendance at this College are recognized by the Roval Colleges of Surgeons and Physicans of London, England, and also by those of Edinburgh. A number of graduates have already taken honors in Great Britain; and may be found in almost every part of the world occupying high positions of professional trust.

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The Toronto General Hospital, opposite the college, supplies ample clinical advantages. This institution may not contain as many beds as those in larger cities, but there are quite enough to meet the requirements of medical students. All forms of disease may there be studied, and all kind of surgical operations are from time to time performed. Indeed, the student will be better able to learn in a small well-appointed hospital than in a large one, where a multitude of cases bewilder the mind and divide the attention. Arrangements have been made by the Hospital Staff to deliver a course of clinical lectures, open to all medical students upon payment of the usual fees.

Editorial Summary.

New Remedy for Dysentery.—The *Canada Lancet* for August, contains a reprint of a paper, originally published in the *Edinburgh Medical Journal*, which from the high standing of its author,—Dr. Kerr, of Galt—and the thorough and careful manner in which the experiments detailed were conducted, cannot fail to attract the attention of the medical profession, and, indeed, has already done so to an extent which must be gratifying to the author. Dr. Kerr appears to have made a specialty of the treatment of dysentery, and more especially directed his attention to the compounding of a medicine which should, as nearly as possible, answer to all the indications of that frequent and fatal disease. Commencing some twenty years ago, with a combination of camphor, henbane, and opium; various other ingredients—amounting in all to thirty two—were successively tried, and the majority discarded. When adding any new ingredient to the original combination, the result was verified to the most satisfactory extent, before any conclusion was arrived at. Seven constitutents were, at last, selected, and the compound so formed has now been tested for over fourteen years. Dr. Kerr communicated his receipe to fifteen of his medical friends, labouring in Canada, California, the Southern States, and Africa, and these gentlemen have tried the medicine in their practice and communicated the results to the author; out of nearly five hundred cases, the records of which have been kept, only four terminated fatally. Of the constitutents of the medicine, four are officinal, viz.: opium, stramonium, dulcamara, digitalis; three non-officinal, sium, lineare, cicuta maculata, conio selinum canadense. All are more or less narcotic; and digitalis, dulcamara, and sium lineare are also

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diuretic. So many are necessary evidently from each possessing some peculiarity in the way in which it affects the system; the combined effect of these pecularities being required to combat the disease. Without opium the combination is slightly aperient, improves appetite, promotes sleep, and, according to experience gained in dysentery and other diseases, heals ulceration of the mucous membrane. In dysentery, opium is necessary apparently to check the frequent motions of the bowels, the strictly curative power depending chiefly, if not altogether, on the other ingredients. In infants generally, and also in a few adults, digitalis does not act favourably. In such instances I have substituted squills with great benefit. Adults generally require the combination with digitalis; of a very few infants the same may be said; and to many adults the combination with digitalis, or that with squills, may be given indifferently. Excepting opium and squills, the part employed is the leaf. Digitalis and squills are combined in the proportion of half a part each,—all the others in that of one part. For infants, opium is reduced to a half part. The usual dose to adults is six and a half grains, digitalis or squills being each half a grain, and all the others one grain each.

Digestive Property of Oysters.—In a communication to the Boston *Medical and Surgical Journal*, Dr. E. H. Hoskins details the result of some experiments on the digestion, or solution of oysters, by artificial means. These experiments point out the reason why oysters are, generally, found an acceptable, and beneficial form of diet for invalids; and though physicians have, hitherto, been in the habit of ordering them empirically, it would appear that there are good chemico-physiological reasons for the selection. The author found that two entire oysters were dissolved by being subjected, for two hours, to the action of one grain of pepsin and one ounce of water. Thinking over this somewhat extraordinary result, he was led to the belief that the oysters themselves possessed a digestive property. This is reasonable enough, for as the writer says: "The oyster is an organized being with a stomach. etc., calculated to digest infusoria—as its food—and hence possessing a gastric juice; and if so, what should hinder that gastric juice from digesting even the oyster itself, if submitted to the proper condition. With oysters, as bought by the quart, there is so much liquor. On boiling a little of this liquor it coagulated, indicating so much coagulable albumen. I took another portion of two drachms of this liquor, one drop of hydrochloric acid, and submitted to 100° Fah. for two hours. It remained perfectly clear, and, on boiling a half of it, there was no coagulation, and, applying Fehling's test, there was the beautiful purple color produced, the whole indicating that there was in the liquor a natural element to produce the result. This experiment I

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have tried repeatedly ; and, to make the matter still more conclusive I placed one ounce of the filtered liquor in a flask, added to it 120 grains of thoroughly washed and wiped, solid part of an oyster, and five drops hydrochloric acid, and submitted to 100° Fah. for seven hours. On filtering, I had only seventeen grains of solid matter left thus showing that 103 grains of the solid oyster had been digested in one ounce of the liquor."

Essence of Ylang-Ylang.—This perfume, which is also known as Ilang-ilang, and Alan-gilan—the latter of which is probably most correct—is made the subject of a short paper, by M. Gal, (*Comptes Rendus*, translated in *Phar. Jour. and Trans.)* The essence is obtained, by distillation, from the flower of the *Unona odoratissima*, an anonaceous tree growing in the Antilies and Jamaica. It has a density of .980 at 15° C, and passes over entirely in distillation, without leaving any carbonaceous residue. Ebullition commences at 160° C., and the boiling point gradually runs to 300° C. The essence is insoluble in water; soluble in ether; and partially soluble in alcohol. The insoluble portion (in alcohol or water ?) when dissolved in ether, appears, after the evaporation of that solvent, as a semi-fluid, transparent mass ; about one-fourth of the essence yields this product. Treated with potash, until all soluble or saponifiable matter is extracted, a substance is left which is insoluble in water. When hydrochloric acid is added to the aqueous portion, a solid body, of crystalline aspect, is deposited. This product possesses the physical and chemical properties of benzoic acid.

Tartrate of Magnesia prepared with Metatartaric Acid.—E. Leger, (*Repert de Pharm.* in Phar. Jour. and Trans. No. 159), remarks on the instability of solutions of tartrate of magnesia, most of the salt being deposited. He proposes to use metatartaric acid prepared by heating the ordinary acid to 170° C (338° F.) ; a variety of the acid, not susceptible of crystallization, is produced. It forms with magnesia a soluble, tasteless, salt, which is said to be a more reliable and energetic purgative than the citrate. The acid should be fused in a porcelain, or silver basin ; small portions of acid being added, successively. The operation is finished as soon as the acid becomes liquid, and assumes an amber colour. The solution of tartrate of magnesia is made with cold water, the proportions necessary are, one part of carbonate of magnesia to two of acid. The solution, thus prepared, may be preserved for several weeks ; and the author is of opinion that this new salt will quickly come into use, as it is much superior to the more expensive and less effective citrate.

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Brazil Nut Oil.—B. Corenwinder, (*Jour. Pharm. et Chim.* in *Pharm. Jour. and Trans.*) gives a paper describing the source from which the brazil nuts of commerce are obtained; and also states the result of an analysis of the kernel of the nut. The *Bertholletia excelsa*, which produces the nuts, is a majestic tree, growing abundantly on the banks of the Orinoco, and in Brazil. The fruit is a spherical nut, about the size of a child's head, and is divided internally into four compartments, each containing several seeds; generally from six to eight in each division. These seeds are the nuts of commerce. An analysis of the fresh kernel gave:

Water,	8. 00
Oil,	65. 60
Nitrogenous matters	15. 31
Non-nitrogenous organic matters,	7. 39
Phosphoric acid 1.35 Lime, potash, silica, etc., 2.35	3. 70
	100. 00

In Brazil and Guiana an excellent edible oil is extracted from the nut, but it is feared that the rapidity with which the oil becomes rancid would preclude its importation into Europe, while in a palatable state; but the author considers that an oil might be obtained for the manufacture of soaps, and other industrial purposes, while the oil-cake might be advantageously employed as manure, or, perhaps, as food for cattle.

Poisoning by Substitution of Strychnine for Quinine.—The Philadelphia *Medical and Surgical Reporter* gives the details of two cases of poisoning, which in all probability resulted from a druggists' mistake. A physicain, of Kentucky, feeling somewhat unwell, went to the store of a druggist, and took from a bottle, labelled "quinine," what he supposed was an ordinary dose of that drug. Shortly afterwards, he was taken violently ill, and, in a short time, expired. The cause of his death was thought to be an affection of the heart. Next day, a boy was served with a similar dose, out of the same bottle, and with a similar result. This aroused the suspicions of the friends of the physician, and the remaining contents of the bottle have been sent for analysis; with what result is not stated. It is generally supposed that strychnine had, by mistake been put in the quinine bottle. If this is the case, it is likely that the matter will not end here, but that others may prove the unfortunate victims of this fatal error.

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Dietetic Value of Oatmeal.—A writer in *La Medicale* speaks very favorably of the value of oatmeal, and, more especially, as a food for infants. Experiments were made with a large quantity of the meal, and it was concluded, that in regard to azotic or plastic elements, and such as are "respiratory," the oatmeal is analagous to human milk, or that of the cow. The most advantageous form of administration was arrived at by macerating a tablespoonful of the meal in a glass of water, for twelve hours, straining through a sieve, boiling until of the consistency of a jelly, and adding sugar or salt, according to taste. Milk may also be employed instead of water. Analysis of oatmeal gave:

Water,	8. 7
Fatty matter,	7. 5
Starch,	64. 0
Nitrogenous matter,	12. 2
Mineral substances,	1. 5
Cellulose, dextrin and loss	6. 1
	100. 00

Strange Instance of Spontaneous Combustion.—In the same journal we notice a case of spontaneous combustion, which, however strange it might at first appear, is, by no means unlikely. A physician had prescribed for a pain in the chest, a liniment of linseed oil and camphor, which the patient applied, but found almost unbearable by reason of the sensation of burning which it occasioned. In about an hour, the cotton wool, upon which the mixture had been applied, took fire, and before it could be removed actually burnt the patient's neck. This story may, or may not be true, but as we have said it is by no means impossible or improbable.

Opium Trade of Great Britain.—In 1840, the amount of opium which passed through the British market was 35,848 pounds. In thirty years the commerce in this drug has been extended so that in 1870 the quantity exported reached 150,000 pounds, valued at £196,165 stg. A like increase is noticeable in the exports of Cinchona bark. In the first named year the quantity sold was 1,058 cwts;. in 1870, 12,785 cwts., valued at £123,375 stg.

Aromatic Tincture of Assafœtida.—A writer in the *American Journal of Pharmacy*, proposes a combination of aromatics with assafœtida, as yielding a mixture of more agreeable odor, and

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lest disgusting taste than the simple tincture. The formula given has been tried, and the preparation is quite permanent:

Tinct. Assafœtidæ, U. S. P. - - - - -	8 fld. oz.
" Aurantii, U. S. P. - - - - -	2 fld. oz.
Ess. Menthæ Pip. - - - - - - -	3 fld. oz.

The dose will be from one and a-half to two fluid drachms, and the mixture should be taken without the addition of water.

Preparation of Camphorated Oil.—J. B. Schmidt, (*Pharmacist and Chem. Record*), proposes an expeditious and effectual method for the solution of the camphor. The gum is pulverised, by the use of a little alcohol, and added to the oil, previously heated to between 140° and 150° F. Solution is immediately effected. No appreciable loss of camphor results from the application of heat.

Ontario College of Pharmacy.

COUNCIL MEETING.

The regular semi-annual meeting of the Council was held on Wednesday, August 6th, 1873.

The following members were present: Messrs. B. Lyman, Hugh Miller, J. T. Shapter, Wm. Saunders, Chas. Brent, J. Roberts, L. W. Yeomans, F. Jordan, E. Harvey and Geo. Hodgetts.

Mr. H. J. Rose, Registrar, took the chair, when he called upon Prof. Shuttleworth and Mr. Love to act as scrutineers. The election of officers was then proceeded with, by ballot, resulting as follows:

President, Mr. Benj. Lyman, who then took the chair and returned thanks for the honor conferred on him.

Vice-President, Mr. Wm. Saunders.

Registrar and Secretary, Mr. George Hodgetts.

Treasurer, Mr. H. Miller.

Auditors, Mr. Shapter and Mr. Love.

Examiners, Mr. J. T. Shapter, Prof. Shuttleworth and Mr. Yeomans.

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In accordance with by-law 19 Mr. Geo. Hodgetts tendered his resignation as member of the Council, thanking the members for the honor conferred on him, and at the same time nominating, as his successor, Mr. N. C. Love, as standing next on the list, at the late election.

Mr. Saunders considered some other section should be represented, as for instance, Niagara or St. Catherines. Mr. Harvey thought sections unrepresented should be favored, though he considered Toronto was not over represented.

The President advocated the election of another Toronto member, so that the Legislature should be watched, and, in case we required amendments to the Pharmacy Act, there would be those on the spot to attend to such matters.

Some little discussion then took place as to the member to fill the vacant seat.

Mr. Shapter proposed, seconded by Mr. Saunders, that Mr. Paffard, of Niagara, be elected. An open vote was taken, which resulted in the election of Mr. Love who then took his seat.

Mr. Jordan proposed, and Mr. Love seconded, that Prof. Shuttleworth continue as editor of the Journal. Carried.

The minutes of the last meeting were read and adopted.

Mr. Saunders read the report of the Examiners :

To the Council of the Ontario College of Pharmacy:

The Examiners beg to report that in accordance with the requirements of the Pharmacy Act an examination of candidates for registration was held yesterday in the lecture room of this college.

Twelve students presented themselves, of whom nine gained the required number of marks to entitle them to a diploma. One hundred marks being possible there were scored by

J. H. C. F. Fisher, Bobcaygeon	81½	1st prize.
W. R. Carmichael, Toronto	80¾	2nd prize.
G. W. York, Waterford	76	
F. H. Holgate, Georgetown	67½	
D. F. Lucas, Buffalo	67	
R. McKenzie, Lucknow	63¾	
G. F. Sproule, Brantford	60¼	
J. B. Smith, Millbrook	60	
J. P. Lawrason, St. George	60	

On Chemistry the papers of Messrs. Holgate and York were very creditable, on other subjects the greatest number of points was obtained as follows:—Botany; Fisher and York. Materia Medica;

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Fisher. Prescriptions; Lucas and Fisher. Pharmacy; Fisher and Carmichael. Practical Dispensing; Holgate, Fisher and Carmichael equal.

It is suggested that two members of the Council be appointed to supervise the practical dispensing and preserve order at the examinations. At present it is extremely difficult to prepare a report in time for the meeting of Council. Should the number of students greatly increase, it would be almost impossible, unless some assistance in this way should be given by the Council.

All of which is respectfully submitted.

WM. SAUNDERS,
R. W. ELLIOT,
H. J. ROSE,
} *Examiners.*

Toronto, August 6, 1873.

Mr. Saunders explained why Mr. Rose was selected as examiner in place of Mr. Brendon.

Moved by Mr. Miller, seconded by Mr. Harvey, that the report of the Examiners be received and adopted. Carried.

Moved by Mr. Saunders, seconded by Mr. Jordan, that a committee of two be appointed from among the members of the Council, to aid the examiners, at the next examination, in the way of supervising the department of Practical Pharmacy, and to assist in the necessary arrangements required. Carried.

Mr. Love and Mr. Harvey were appointed a committee to supervise.

Mr. Saunders presented an account from Brown Bros. for prizes. Approved by Council.

The Treasurer's report was read as follows:

George Hodgetts, Treasurer, in account with the Ontario College of Pharmacy:

RECEIPTS.

Feb'y. 1, 1873.	To Balance in Bank		$1,496.70
1	" " hand		136.14
March 5	" Cash from Registrar		84.00
May 3	" " "		206.50
7	" " "		118.75
June 2	" " "		234.00
5	" " "		383.00
7	" " "		234.60
14	" " "		263.00
23	" " "		164.00
30	" Int. on ac. in Canada Bank of Com.		27.80
July 30	" Cash from Registrar		190.00
			$3,538.49

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DISBURSEMENTS.

Feb'y.	5, 1873.	By	Cash paid, expenses Members attending Council Meeting, February Session	$61.76
	5	"	Cash paid, Examiners	30 00
	5	"	" J. A. Clark, Student ...	17.00
	7	"	" *Globe* Print. Co. Advt.	12.00
	15	"	" *Monetary Times* account Journal, Nos. 6 & 7..	109.00
	19	"	" *Mail* Print. Co. Advt...	10.00
	22	"	" Postage account, Col.	3.20
March	5	"	" H. J. Rose, 9 mo. salary as Registrar	300.00
	5	"	" Geo. Hodgetts, 6 mo.do. as Treasurer	50.00
	5	"	" Postage account Jour...	6.00
	17	"	" *Monetary Times* account Journal No. 8.....	54.25
April	1	"	" Postage account Jour...	6.50
	21	"	" *Monetary Times* account Journal No. 9.....	54.25
May	2	"	" Postage act. College $3 Journal $5.50.....	8.50
	6	"	" *Monetary Times* account Journal No. 10	55.00
	10	"	" Brown Bros., Prizes $17.05, labels $1.50	18.55
	23	"	" Postage Act. College...	3.00
	28	"	" " " ...	3.00
	29	"	" " " ...	1.00
June	3	"	" " Journal ..	6.00
	4	"	" " College...	3.00
	13	"	" " " ...	3.00
	24	"	" *Monetary Times* account Journal No. 11	54.25
	24	"	" Postage Act. Journal...	1.85
	27	"	" " College...	3.00
July	2	"	" E. B. Shuttleworth ¼ salary as editor	125.00
	5	"	" Postage act. Journal $6 account College $4..	10.00
	8	"	" J. Roberts, attendance & Travelling expenses, Feb. 1872.....	23.92
	8	"	" Messrs. Elliot & Co., prizes Aug. examination 1872	9.85

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10	"	"	*Monetary Times* account Journal No. 12	57.25
10	"	"	Do. print'g envel., &c..	11.70
21	"	"	H. J. Rose, ¼ salary as Registrar	100.00
30	"	"	Hunter, Rose & Co. adv.	2.20
30	"	"	Telegram 35c., Commission on Mr. Waits cheque 25c...	60
30	"	Bal. in Canadian B'k of Commerce		2,323,86
				$3,538.49

We the undersigned appointed by the Ontario College of Pharmacy have examined the above statement, and compared it with vouchers, and find them all correct.

WM. H. DUNSPAUGH,
HUGH MILLER, } *Auditors.*

Toronto, Aug. 1, 1873.

Pharmaceutical Journal in Account with Geo. Hodgetts, Treasurer:

RECEIPTS.

July 31, 1873.	To Balance.....	$540.85
Aug. 1	To cash from Registrar, advertisements, &c	$120.00

DISBURSEMENTS.

Feb. 15, 1873.	By cash paid		*Monetary Times* printing No. 6 and 7	$109.00
Mar. 5	"	"	Postage on Journal	6.00
17	"	"	*Monetary Times* print'g No. 8	54.25
Apr. 1	"	"	Postage on Journal	6.50
21	"	"	*Monetary Times* print'g No. 9	54.25
May 2	"	"	Postage on Journal	5.50
6	"	"	*Monetary Times* print'g No. 10	55.00
June 3	"	"	Postage on Journal	6.00
24	"	"	*Monetary Times* print'g No. 11	54.25
24	"	"	Postage on Journal	1.85
24	"	"	E. B. Shuttleworth, ¼ salary..	125.00
July 5	"	"	Postage on Journal	6.00
10	"	"	*Monetary Times* print'g No. 12	57.25
				$540.85

We the undersigned, appointed by the Ontario College of Pharmacy have examined the above statement, and compared it with vouchers, and find them all correct.

WM. H. DUNSPAUGH,
HUGH MILLER, } *Auditors.*

Toronto, Aug. 1, 1873.

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Moved by Mr. Miller, seconded by Mr. Love, that the report of the Treasurer by received and adopted. Carried.

The Registrar's report was read as follows :

To the Council Ontario College Pharmacy,

GENTLEMEN,—Your Registrar begs to report, that for the past six months there have been issued 401 renewals for certificates of registration, 23 new registrations have been made and 27 fees for the year 1872 have been paid. Circulars have been sent twice to members in arrears for the current year and I propose sending again (the Journal for the present month having been stopped to such parties) explaining, thereby remitting at once, they can have the Journal sent so as to keep their fyles perfect. The number still in arrear is about 100, though the payments are coming in daily.

There having been some remarks made as to the information given by me regarding members in arrear, I beg to explain to the Council my action in the matter. On the 30th May I was applied to for a list of persons who had not complied with the requirements of the Pharmacy Act, this information I did not think myself compelled or justified in giving and refused to do so. About 10 days subsequently I received a letter from a lawyer in Toronto enclosing a list of names of parties whom he wished to know, were registered or not for the current year. Upon consulting a legal friend I was told that as Registrar I could not withhold the information without rendering myself liable to legal proceedings, and I accordingly gave the information, at the same time notifying the parties themselves that such information had been asked for and given. This led parties to think that I was a consenting party to the blackmailing letters which had been sent.

I had received application previously from Registered members and others asking whether certain persons had registered, and had given it.

I have to report that I have received several applications to register parties, who by sending certificates worded to the effect that applicant is entitled to be registered under the Pharmacy Act, and signed by members of the College in many cases, which on enquiry I have found to be incorrect. It is to be regretted that members should not be more familiar with the Act than to sign such certificates as it places your Registrar in the awkward situation of having to call in question a written statement.

With regard to the financial condition of the Journal, I have no material improvement to report. When in New York in April last, I placed it in the hands of an advertising agent who thought he could procure some, but I have not received any except that of a sewing machine company who require the advertisement to be taken in goods.

The receipts for the Journal account for the past year have been

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Dr.

For Advertising	$288.15
Subscriptions and back numbers	13.95
Balance on hand	53.90
	$356.00

Dr.

By Treasurer	$ 19.35
Postages	15.50.
Treasurer	63.65
Treasurer	137.50
Treasurer	120.00
	$356.00

The accounts outstanding are as follows:

Past due	$165.00
Do. disputed	50.00
Current	275.00
	$490.00

Respectfully submitted,
HENRY J. ROSE.

Some little discussion took place on the action of detective Mason in attempting to blackmail some of the members of the College. Letters on the subject were read from some of the members; also one taking exception to the registration of Mr. Brodie.

Mr. Rose was requested to make explanations in regard to several items which came up in his report, which he did in a satisfactory manner.

Moved by Mr. Saunders, seconded by Mr. Jordan, that a cordial vote of thanks be given to Mr. H. J. Rose, our retiring registrar, for the able manner in which he has labored since the first meeting of our Council. Carried unanimously.

Moved by Mr. Saunders, seconded by Mr. Brent, that certificates of the New York College of Pharmacy, and of the Chicago College of Pharmacy, be accepted equally with those of the Philadelphia College of Pharmacy.

Mr. Saunders made a few remarks expressive of the friendly feeling of this College towards kindred Institutions. Motion carried unanimously.

The President brought up the case of defaulters, and after some discussion the registrar was directed to act according to a resolution

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at previous meeting. Some conversation then took place as to the best means of reaching those druggists throughout the province who have never registered, but nothing definite was arrived at.

Mr. Saunders read a letter from Mr. Jeffries, asking for the registration of Mr. Switzer of Petrolia, who had previously been in partnership with him at Beaverton.

Moved by Mr. Saunders, seconded by Mr. Shapter, that the certificate be granted. Carried.

The President suggested the advisability of a committee, to be appointed by the Council, to secure some amendments to the Pharmacy Act.

Moved by Mr. Saunders, seconded by Mr. Jordan, that a committee be appointed to consider what alterations are desirable in the Pharmacy Act, to consist of the President, Registrar, Mr. Love, Mr. Shapter and Mr. Miller to report at the next meeting. Carried.

Mr. Yeomans gave notice of motion for amendment to by-law No. 3 to provide for Registrar to place before the Council, at each meeting, the papers upon which he may have issued any certificates during the time intervening since meeting previous.

The President drew the attention of the Council to the fact, that the Medical Council were about to introduce a bill, in which there is a clause affecting druggists; the members expressed themseves satisfied that the members of the Council resident in Toronto would do their duty in the matter. He also stated that several members of the College had been prosecuted for selling peppermint lozenges on Sunday. No action was taken, and there being no other business, the Council adjourned.

GEO. HODGETTS,
Secretary & Registrar.

Registrar's Notices.

The Registrar would beg to call the attention of those members of the College who have not paid the Annual Fees for 1872 and 1873, to sections 17, 20, and 25 of the Pharmacy Act, which they will do well to read. (See Pharmacy Act in Sale of Poisons Book.)

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The Registrar is sure that those who have the interest of the profession and the College at heart will lose no time in paying up their fees; and those who have not registered, if they consult their own interest, will lose no time in doing so. All business in connection with the College to be addressed to

GEO. HODGETTS, REGISTRAR,
Toronto.

LIST OF CHEMISTS, *who have renewed their registration since the list was published last month.*

AMBROSSE, J. D. L., Brampton.
BANISTER, E., Brampton.
BROWN, THOS., Paris.
BROWN, WM., Owen Sound.
COPLAND, THOS., Hamilton.
FEAD, W., Stouffville.
HORTON, W. D., Windsor.
JOHNSTON, W. S., Peterboro.
KEMPT, A. W., Peterboro.
LAW, R. E., Richmond Hill.
PERRY, J. J., Napanee.
PERRY, R. E., Napanee.
SMITH, S. H., St. Catharines.
THOMAS, E. P., Forest.
WALMSLEY, D. L., Elmira.
WEEKS, A. D., Uxbridge.
WILSON, D. G., Wingham.
YEOMANS, H., Belleville.
YEOMANS, L. W., Belleville.
YORK, J. E., Otterville.

New Registrations.

DYKE, THOS. J., Detroit.
SWITZER, E. R., Petrolia.

The following gentlemen, having passed the examination, have been duly registered:

CARMICHAEL, W. R., Toronto.
FISHER, J. H. C. F., Bobcaygeon.
HOLGATE, F. H., Georgetown.
LAWRASON, J. P., St. George.
LUCAS, D. F., Buffalo.
MCKENZIE, R., Lucknow.
SMITH, J. B., Millbrook.
SPROULE, G. F., Brantford.
YORK, G. W., Waterford.

LIST OF ASSOCIATES, *from 15th June*, 1872.

APPLETON, R. H., Buffalo.
BLACKADER, D. R., Brantford.
BREDIN, R. G., Belleville.
CHERRY, JAS. L., Woodstock.
CLINIE, J. D., Millpoint.
COOK, J. C., Kincardine.
COTTRELL, G. W., London.
GIBBARD, JOHN, Toronto.
GOODEVE, W. H., Guelph.
GREEN, W. J., Port Hope.
HOWSE, W. R., Toronto.
HOWARD, T. A., Montreal.
KENLY, D., Ottawa.
KELLOCK, D., Perth.
KELLOCK, JAS. F., Perth.
MUSSELMAN, E., Brantford.
MATHIESON, G., Toronto.
MILLER, E., Dresden.
MITCHELL, J. A., London.
MCLAREN, A. D., Normanton.
NICHOL, A. S., Perth.
OLIVER, N. E., Petrolia.
PHILIPS, P., Leamington.
ROSSER, H., London.
STRONG, W. T., London.
SCHOFIELD, H., Toronto.
THORNTON, J. A. M., Smith's Falls.
TAYLOR, E. B., Toronto.
WALTON, E., Peterborough.
WINKLE, E., Mt. Forest.
WATSON, CHAS., Arnprior.
WIGGLE, S., Leamington.

GEO. HODGETTS, REGISTRAR.

Toronto, 27th August, 1873.

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Drugs, Medicines, &c.	$ c.		$ c.
Acid, Acetic, fort	0 14	@	0 15
Benzoic, pure	0 23		0 30
Citric	1 50		1 60
Muriatic	0 05		0 06
Nitric	0 11½		0 15
Oxalic	0 27		0 30
Sulphuric	0 03½		0 07
Tartaric, pulv	0 50		0 50
Ammon, carb. casks	0 23		0 24
" jars	0 23		0 24
Liquor, 880	0 25		0 28
Muriate	0 14		0 15
Nitrate	0 45		0 60
Ætl.er, Acetic	0 45		0 50
Nitrous	0 35		0 37
Sulphuric	0 50		0 50
Antim. Crude, pulv	0 13		0 17
Tart "	0 65		0 70
Alcohol, 95 per ct.....Cash	1 60		1 72
Arrowroot, Jamaica	0 16		0 22
Bermuda	0 50		0 65
Alum	0 02½		0 03½
Balsam, Canada	0 45		0 50
Copaiba	0 85		0 90
Peru	3 80		4 00
Tolu	0 90		1 00
Bark, Bayberry, pulv	0 20		0 22
Canella	0 17		0 20
Peruvian, yel. pulv	0 42		0 50
" red "	2 10		2 20
Slippery Elm, g. b	0 15		0 20
" flour, packets	0 28		0 32
Sassafras	0 15		0 20
Berries, Cubebs, ground	0 20		0 25
Juniper	0 06		0 10
Beans, Tonquin	0 62		1 10
Vanilla	26 00		28 00
Bismuth, Alb	3 40		4 00
Carb.	3 65		4 00
Camphor, Crude	0 38		0 40
Refined	0 45		0 50
Cantharides	2 80		3 00
Powdered	2 85		3 10
Charcoal, Animal	0 04		0 06
Wood, powdered	0 10		0 15
Chiretta	0 20		0 30
Chloroform	1 10		1 65
Cochineal, S. G	0 80		0 95
Black	1 10		1 20
Colocynth, pulv	0 50		0 60
Clolodion	0 90		1 00
Elaterium.....oz	5 80		5 90
Ergot	0 50		0 60
Extract Belladonna	2 00		2 25
Colocynth, Co	1 25		1 75
Gentian	0 50		0 60
Hemlock, Ang	0 85		0 95
Henbane, "	2 10		2 40
Jalap	5 00		5 50
Mandrake	1 75		2 00
Nux Vomic.....oz	0 40		0 50
Opium .....oz	1 50		
Rhubarb	5 00		5 50
Sarsap, Hon. Co	1 00		1 20
" Jam. Co	4 00		4 50
Taraxicum, Ang	0 70		0 80
Flowers, Arnica	0 17		0 25
Chamomile	0 32		0 40
Gum, Aloes, Barb. extra	0 70		0 80
" " good	0 40		0 50
" Cape	0 16		0 20
" " powdered	0 20		0 30
Socot	1 05		1 35
" " pulv	1 00		0 00
Arabic, White	0 70		0 75
" powdered	0 60		0 75
" sorts	0 28		0 30
" " powdered	0 42		0 50
" com. Gedda	0 13		0 16
Assafœtida	0 35		0 42
British or Dextrine	0 13		0 15
Benzoin	0 35		0 75
Catechu	0 12		0 15
" powdered	0 25		0 30
Euphorb, pulv	0 35		0 40
Gamboge	1 40		1 50
Guaiacum	0 35		1 00
Myrrh	0 50		0 70

Drugs, Medicines, &c.—*Contd.*	$ c.		$ c.
Sang Dracon	0 60		0 70
Scammony, powdered	6 00		6 50
" Virg. "	14 50		—
Shellac, Orange	0 55		0 60
Gum, Shellac, liver	0 50		0 52
Storax	0 40		0 45
Tragacanth, flake	1 10		1 40
" common	0 53		0 65
Galls	0 28		0 32
Gelatine, Cox's 6d	1 15		1 20
Glycerine, common	0 25		0 30
Vienna	0 25		0 30
Prices	0 60		0 75
Honey, Canada, best	0 15		0 17
Lower Canada	0 14		0 16
Iron, Carb. Precip	0 20		0 25
" Sacchar	0 40		0 55
Citrate Ammon	1 50		1 50
" & Quinine, oz	0 53		0 58
" & Strychine "	0 17		0 25
Sulphate, pure	0 08		0 10
Iodine, good	10 00		10 50
Resublimed	0 75		11 00
Jalapin	1 25		1 50
Kreosote	2 40		2 50
Leaves, Buchu	0 22		0 30
Foxglove	0 25		0 30
Henbane	0 35		0 40
Senna, Alex	0 27		0 60
" E. I	0 14		0 20
" Tinnevilly	0 20		0 30
Uva Ursi	0 15		0 17
Lime, Carbolate.....brl	5 50		—
Chloride	0 06		0 07
Sulphate	0 08		0 12½
Lead, Acetate	0 14		0 15
Leptandrin.....oz.	0 60		—
Liq. Bismuth	0 50		0 75
Lye, Concentrated	1 75		2 00
Liquorice, Solazzi	0 50		0 55
Cassano	0 23		0 40
Other brands	0 14		0 25
Liquorice, Refined	0 35		0 45
Magnesia, Carb..... 1 oz.	0 20		0 25
" ..... 4 oz.	0 17		0 20
Calcined	0 65		0 75
Citrate.....gran.	0 63		0 75
Mercury	1 30		1 35
Bichlor	1 30		1 40
Chloride	1 45		1 55
C. Chalk	0 65		—
Nit. Oxyd	1 60		1 70
Morphia Acet	4 45		4 60
Mur.	4 45		4 60
Sulph	4 60		4 75
Musk, pure grain.....oz	23 00		—
Canton	0 90		1 20
Oil, Amonds, sweet	0 42		0 50
" bitter	14 00		15 00
Aniseed	4 00		4 25
Bergamot, super	6 25		6 50
Carraway	3 20		3 50
Cassia	2 80		2 90
Castor, E. I	0 15		0 15
Crystal	0 22		0 25
Italian	0 26		0 28
Citronella	1 25		1 35
Cloves, Ang	2 20		2 40
Cod Liver	1 5		1 50
Croton	1 75		2 00
Juniper Wood	0 80		1 00
Berries	6 00		7 00
Lavand, Ang.....oz.	0 90		1 00
Exotic	1 40		1 60
Lemon, super	5 00		5 50
ord	3 20		3 40
Orange	4 00		4 25
Origanum	0 65		0 75
Peppermint Ang	13 00		14 40
" Amer	3 50		3 75
Rose, Virgin	8 50		8 75
" good	6 80		7 00
Sassafras	0 90		1 00
Wintergreen	6 00		6 50
Wormwood, pure	4 00		6 50
Ointment, blue	0 90		1 00
Opium, Turkey	8 50		8 75
pulv	10 50		10 75

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DRUGS, MEDICINES, &c.—*Cont'd*	$ c.	$ c
Orange Peel, opt.	0 30	0 36
" good	0 12½	0 20
Pill, Blue, Mass	1 00	1 00
Potash, Bichrom	0 23	0 27
Bi-tart	0 33	0 35
Carbonate	0 14	0 20
Chlorate	0 55	0 60
Nitrate	10 50	11 00
Potassium, Bromide	11 5	1 40
Cyanide	0 75	0 80
Iodide	7 75	8 00
Sulphuret	0 25	0 35
Pepsin, Boudault's...oz	1 40	—
Houghton's... doz.	8 00	9 00
Morson's...oz.	0 85	1 10
Phosphorus	0 95	1 00
Podophyllin	0 50	0 60
Quinine, Pelletier's	—	2 45
Howard's	2 50	—
" 100 oz. case.	2 45	—
" 25 oz. tin..	2 45	—
Root, Colombo	0 13	0 20
Curcuma, grd	0 12½	0 17
Dandelion	0 17	0 20
Elecampane	0 16	0 17
Gentian	0 08	0 10
" pulv	0 15	0 20
Hellebore, pulv	0 17	0 20
Ipecac,	1 50	1 60
Jalap, Vera Cruz	1 00	1 25
" Tampico	0 70	1 00
Liquorice, select	0 12	0 13
" powdered	0 15	0 20
Mandrake "	0 20	0 25
Orris, "	0 20	0 25
Rhubarb, Turkey	2 50	2 75
" E. I	1 10	1 20
" " pulv	1 20	1 30
" " 2nd	0 90	1 00
" French	0 75	—
Sarsap., Hond	0 40	0 45
" Jam	0 88	0 90
Squills	0 10	0 15½
Senega	0 90	0 95
Spigelia	0 25	0 30
Sal., Epsom	2 25	3 00
Rochelle	0 32	0 35
Soda	0 02½	0 03
Seed, Anise	0 13	0 16
Canary	0 05	0 06
Cardamon	2 25	2 50
Fe ugreek, g'd	0 09	0 10
Hemp	0 06½	—
Mustard, white	0 14	0 16
Saffron, American	1 15	1 50
Spanish	12 00	13 00
Santonine	8 25	9 00
Sago	0 08	0 09
Silver, Nitrate...Cash	14 85	16 50
Soap Castile, mottled	0 11	0 14
Soda Ash	0 04	0 05
Bicarb. Newcastle	—	6 5
" Howard's	0 14	0 16
Caustic	0 06½	0 06½
Spirits Ammon., arom	0 35	0 35
Strychnine, Crystals	2 60	2 70
Sulphur. Precip	0 10	0 12½
Sublimed	0 03½	0 05
Roll	0 03	0 04½
Vinegar, Wine, pure	0 55	0 60
Verdigris	0 35	0 40
Wax, White, pure	0 75	0 80
Zinc. Chloride...oz	0 10	0 15
Sulphate, pure	0 10	0 15
" common	0 06	0 10
DYESTUFFS.		
Annatto	0 35 @	0 60
Analine, Magenta, cryst	3 00	4 00
" liquid	2 00	—
Argols, ground	0 15	0 25
Blue Vitrol, pure	0 10	0 10
Camwood	0 06	0 09
Copperas, Green	0 01½	0 02½
Cudbear	0 16	0 25
Fustic, Cuban	0 02½	0 04
Indigo, Bengal	2 40	2 50
Madras	0 50	0 95
Extract	0 30	0 35

DYESTUFFS—*Continued.*		
Japonica	0 06½	0 07
Lacdye, powdered	0 33	0 38
Logwood	0 02	0 03
Logwood, Camp	0 02	0 3½
Extract	0 10	0 14
" 1 lb. bxs	0 13	—
" ½ lb. "	0 14	—
Madder, best Dutch	0 15	0 16
2nd quality	0 12	0 14
Quercitron	0 03	0 05
Sumac	0 06	0 08
Tin, Muriate	0 10½	0 12½
Redwood	0 05	0 06
SPICES.		
Allspice	0 11½ @	0 12
Cassia	0 39	0 40
Cloves	0 27	0 28
Cayenne	0 30	0 35
Ginger, E. I	0 16	0 17
Jam	0 20	0 30
Mace	1 75	1 75
Mustard, com	0 20	0 25
Nutmegs	1 15	1 20
Pepper, Black	0 22½	0 23
White	0 48	0 50
PAINTS, DRY.		
Black, Lamp, com	0 07 @	0 08
" refined	0 25	0 30
Blue, Celestial	0 08	0 12
Prussian	0 65	0 75
Brown, Vandyke	0 10	0 12½
Chalk, White	0 01	0 01½
Green, Brunswick	0 07	0 10
Chrome	0 16	0 25
Paris	0 30	0 36
Magnesia	0 20	0 25
Litharge	0 07	0 09
Pink, Rose	0 12½	0 15
Red Lead	0 07½	0 08
Venetian	0 02½	0 03½
Sienna, B. & G	0 07	0 08
Umber	0 07	0 10
Vermillion, English	1 50	1 60
American	0 25	0 35
Whiting	0 85	0 90
White Lead, dry, gen	0 08½	0 09
" " No. 1	0 07	0 08
" " No. 2	0 05	0 07
Yellow Chrome	0 12½	0 35
" Ochre	0 02½	0 03½
Zinc White, Star	0 10	0 12
COLORS, IN OIL.		
Blue Paint	0 12 @	0 15
Fire Proof Paint	0 06	0 08
Green, Paris	0 30	0 37½
Red, Venetian	0 07	0 10
Patent Dryers, 1 lb tins	0 11	0 12
Putty	0 03½	0 04½
Yellow Ochre	0 08	0 12
White Lead, gen. 25 lb. tins	2 50	—
" No. 1	2 25	—
" No, 2	2 00	—
" No. 3	1 75	—
" com	1 30	—
White Zinc, Snow	2 75	3 25
NAVAL STORES.		
Black Pitch	5 00 @	5 25
Rosin, Strained	4 50	—
Clear, pale	7 80	—
Spirits Turpentine	0 60	0 65
Tar Wood	5 50	5 75
OILS.		
Cod	0 63 @	0 65
Lard, extra	0 90	—
No. 1	0 80	0 85
No. 2	0 75	0 90
Linseed, Raw	0 76	0 80
Boiled	0 81	0 85
Olive, Common	1 10	1 20
Salad	1 80	2 30
" Pints, cases	4 20	4 40
" Quarts	3 25	3 50
Seal Oil, Pale	0 75	0 80
Straw	0 68	0 75
Sesame Salad	1 30	1 35
Sperm, genuine	2 20	2 40
Whale refined	0 90	0 95

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CANADIAN

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Original and Selected Papers.

PEPSIN.*

BY CHARLES SYMES, PH.D.

There are few medicines, perhaps, which have received so extensive a trial, and yet respecting which such differences of opinion exist, as pepsin. It cannot be doubted that this arises chiefly from the fact that it has not been recognized by the Pharmacopœia, and hence no standard tests of quality exist in this country. Chemists purchase the kind they think best, influenced perhaps by the advertisements of manufacturers or the report of some experimenter who may have used very carefully prepared samples, and not the commercial article; or it might be they are guided by price, the best qualities being usually attributed to the highest priced articles of its kind, and this, indeed, should be a correct guide. But I have also heard of orders for pepsin in which the only condition stipulated for was its low price. It occasionally occurs that extremes meet, and my experience indicates that they are not so wide apart as would be supposed, even in this instance. It will not be surprising, however, under such circumstances, that pepsin might mean anything posses-

* From the Pharmaceutical Journal & Transactions.

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sing more or less digestive power, an appearance varying from that of decorated liquorice to pulv. doveri, and an odor of almost nil to the strong smell of bacon. Variable as it might be, it has stood the test of time, and at last asserted its right to recognition and admission to at least the outer circle, viz: to the Appendix of the British Pharmacopœia.

For some time past I have been conducting a series of experiments on pepsin, first with the view of ascertaining the quality of commercial specimens by different makers; and secondly, of testing the various processes which have been proposed for its preparation as a medicinal or restorative agent. My results under the first head somewhat surprised me, and might do others who have not made this subject one of experimental inquiry; one or two examples will perhaps serve as illustrations. It will be seen that I have used a minimum quantity of acid, so as to test the full peptic power of the various samples—the amount of acid often recommended in a given quantity of fluid being much larger than can possibly exist in the human stomach. In each instance, the white portion of hard-boiled eggs chopped in small pieces was used, and after digestion the undissolved portions, before weighing, were brought to as nearly as possible the same condition of dryness as they were in previously; 100 grains were introduced into six vials—to five of these ten drachms of distilled water, ten minims dilute hydrochloric acid, and ten grains of pepsin of various kinds were added; in the sixth, four drachms of the distilled water were replaced by the same quantity of pepsin wine, each drachm of which should have represented two-and-a-half grains of Pepsina Porci; all were digested under precisely the same conditions at a temperature of 100° for 12 hours. The following gives the amount by weight of undissolved albumen in each vial:—

No.	1	left	undissolved,	1½	gr.
"	2	"	"	2½	"
"	3	"	"	24	"
"	4	"	"	28	"
"	5	"	"	41	"
"	6	"	"	56	"

Now, the medical man who is desirous of testing the value of pepsin as a remedial agent, in one or more cases where he considers it ought to be of service, if there is any good in it, will be perfectly satisfied of its efficacy should Nos. 1 or 2 be dispensed, more or less so if No. 3; but what if No. 5? or if he should have prescribed pepsin wine, as No. 6? It might be said that this latter is largely prescribed, and also taken by invalids without prescription, frequently with good results. I can only reply that, according to the above statement, it possesses about one-half the peptic power that it should do, and that as the stomach is a laboratory whose operations are

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somewhat obscure even to the closest observer, in imitating its processes in a vial where we lack the vital agency, the activity of any samples operated on is almost sure to be underated. Nevertheless, experiments conducted carefully under the same conditions are valuable as affording comparative results; and certain is it that wine or any alcoholic fluid is a most unsatisfactory vehicle for pepsin, also, that, when taken with food, it unquestionably retards digestion. The above experiment was several times repeated, first with portions of precisely the same samples, and also with samples by the same makers, but obtained from different sources; the results varied slightly, but bore the same relation to each other. It was thought desirable not to obtain the samples from the manufacturers direct, informing them of the purpose for which they were required, but all were obtained from authentic sources. The pepsin Nos. 1 and 2 were both by the same manufacturer, and, as it will be seen, were of good quality, but it is somewhat anomalous that according to the dose given the former should have been about five times the strength of the latter, whereas it would appear that there is very little difference between them. The catalytic action seems to be more vigorous in the early part of the process of digestion than towards the end; therefore, had a larger amount of albumen been present in the vial No. 1, it is possible a larger amount might have been dissolved, and the residue have been but slightly greater than it actually was. Nevertheless, this could not have been sufficient to account for the great similarity in activity of the two specimens.

Of the process for its preparation as a medicinal agent, that of precipitating its solution by acetate of lead, and subsequent separation of the lead by hydrosulphuric acid, has probably been longest in use, but its activity appears to be more or less injured by the chemical treatment. The process of M. Brucke, consisting of solution in dilute in phosphoric acid, neutralization with lime-water, resolution in dilute hydrochloric acid, and final treatment with cholesterin, rectified spirit, and ether, yields a product possessing active peptic properties, but it is more suitable as a laboratory experiment than for the purpose of manufacture on a commercial scale. Tannin and alcohol have both been proposed as precipitants for pepsin, but I am not aware of any definite process in which these are used for its preparation on a large scale. Next in order is the somewhat primitive process of Dr. Beale. It is given in the *Pharmaceutical Journal*, N. S,, Vol. II., p. 684, and is as follows:

"The mucous membrane of a perfectly fresh pig's stomach was carefully dissected from the muscular coat, and placed on a flat board. It was then lightly cleansed with a sponge and a little water, and much of the mucus, remains of food, etc., carefully removed. With the back of a knife or ivory paper knife, the surface was scraped very hard in order that the glands might be squeezed, and their contents pressed out. The viscid mucus thus obtained

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contains the pure gastric juice, with much epithelium from the glands and surface of the mucous membrane. It is to be spread out on a piece of glass, so as to form a very thin layer, which is to be dried at a temperature of 100° over hot water or *in vacuo* over sulphuric acid. Care must be taken that the temperature does not rise much above 100°, because the action of the solvent would be completely destroyed. When dry, the mucus is scraped from the glass, powdered in a mortar, and transferred to a well-stoppered bottle."

Several persons who have performed experiments with this (so called) pure digestive powder, including Dr. Beale himself, have spoken highly of its peptic qualities; and from their position we cannot doubt the accuracy of their experiments and statements. In my own hands, however, I cannot say the results were so satisfactory as I had anticipated. The process, too, if carried out strictly according to Dr. Beale's instructions, is a very wasteful one, more pepsin being lost than is obtained; if, on the other hand, it is attempted to obtain a larger quantity, the quality is reduced. The mucus which is directed to be sponged off, and which is usually considerable in quantity, possesses about one-third to one-half the activity of the mucus which is afterwards directed to be *scraped* off; then, after this scraping, a considerable amount of pepsin remains, which can be demonstrated by dissolving it out.

Lastly, we have the process of Mr. E. Scheffer, the most satisfactory as regards uniformity of excellence and economy in working of any I have tried. It has been detailed in this Journal so recently I need not therefore even recapitulate here. It can be made to answer strictly to the tests given; it keeps well; is soluble in an acidulated solution, and hence might be prescribed of almost any strength. Amongst other experiments one was performed in which a given quantity of the moist mucus scraped from fresh cleansed pigs' stomachs, was divided into equal portions, one of which was retained moist, another dried in a thin layer at a temperature not exceeding 100°; from a third portion the pure pepsin was separated by Mr. Scheffer's process, but adding sufficient sugar of milk to bring it to the exact weight of the portion simply dried.

Into each of four vials 100 grains of coagulated albumen, 10 drops dilute hydrochloric acid, and 10 drachms of water were placed; to the first 10 grains of the dried mucus, to the second 80 grains of the moist (it requires this quantity to produce 10 grains of the dry,) to the third 10 grains of the purified saccharated, to the fourth 10 grains of the same, and two drachms of the water were replaced by sherry wine. After twelve hours' digestion, at a temperature of 100°, the results were as follows:

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No.	1	left	undissolved	31	grs.
"	2	"	"	22	"
"	3	"	"	12	"
"	4	"	"	52	"

From this we learn that the undried mucus is more active than the same substance after drying; that the pure pepsin diffused through sugar of milk is more active than the mucus from which it is obtained; and finally, we prove the truth of the statement before made, that wine partially destroys the activity of pepsin and is an unsuitable vehicle for its administration.

I propose, therefore, to substitute for pepsin wine an *elixir*, made by dissolving the purified moist pepsin in raspberry vinegar, so that one fluid drachm shall be capable of dissolving 100 grains of coagulated albumen. This keeps well, and is perfectly palatable.

ON THE MANUFACTURE OF CHLORAL HYDRATE IN GERMANY.*

BY GUSTAV DETSENYI.

The extraordinary reduction in the price of hydrate of chloral since 1869—from 90 thalers per kilo to 3 thalers—is easily explained when we consider the enormous increase in its production which the demand for it has created. Early in the year 1869, Dr. Liebreich of Berlin, introduced it as a medicine, and thus gave an impulse to the invention of simpler and cheaper methods of preparing it, and to-day its manufacture has reached such a state of perfection that we can scarcely imagine any improvement in it possible. Three years ago it was scarcely possible to prepare a few pounds of chemically pure chloral hydrate in as many weeks; now 500 pounds per day are made in a few German chemical works.

The principal part of the operation is passing chlorine gas into 96 per cent. alcohol. The chlorine is made from muriatic acid and black oxide of manganese. In Schering's establishment, in Berlin, a large crock of stoneware, four or five feet high, is half filled with the black oxide of manganese, and muriatic acid is allowed to flow in. A delivery tube of lead and glass conducts the chlorine thus generated to a Woulfe bottle, where it passes through water, and thence into a carboy containing 120 to 150 pounds of 96 per cent. alcohol. A second carboy is also connected with the first, in order to collect the hydrochloric acid formed.

The chlorine is passed uninterruptedly for twelve or fourteen

* From the Journal of Applied Chemistry.

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days, uutil the alcohol is warmed to 60° or 70° C., and acquires a density of 41° Baume. This forms one-half of the operation, and requires cautious, conscientious and experienced workmen. Especial attention must be devoted to the luting and to refilling the chlorine generator. The apparatus is luted with a paste of bran flour and water, and the cover of the crock is loaded with heavy weights. Before renewing the charge of black oxide of manganese, the chloride of manganese solution is drawn off by a cock near the bottom, and the chlorine in the vessel allowed to escape by a delivery tube that goes up through the roof into the open air. In the Berlin establishment above mentioned there are forty of these apparatus at work, producing three carboys of chloral per day.

The second part of the operation consists in the purification of the chloral hydrate. For this purpose the chlorated alcohol before obtained is placed in a copper still lined with lead, and capable of holding from 300 to 400 pounds, and mixed with an equal weight of oil of vitriol, and then carefully heated over an open charcoal fire to the boiling point. A considerable quantity of muriatic acid is thus driven off, while the chloral vapors are condensed by an upright cooler. The boiling is continued until hydrochloric acid ceases to be given off, which usually requires seven or eight hours for 150 pounds of chloral. It is worthy of note that in this operation the contaminating alcoholate of chloral is entirely destroyed.

The cooler is now taken away, the still provided with a thermometer, and the free chloral distilled off. At first the liquid boils at 95° to 96° F., and by the time the thermometer rises to 100° all the chloral has gone over, and the distillation may be stopped. The distillate is now rectified in a smaller copper retort or still, holding but 150 to 180 pounds, lined with lead, and provided with a delicate thermometer. Before distilling, the free hydrochloric acid still remaining in the chloral is neutralized with triturated chalk. The distiiled chloral is caught in glass flasks, and three ounces of water added to every four pounds of chloral, and cooled rapidly by continuous shaking. If required to be crystallized, it is emptied into large flat porcelain dishes, and in half an hour forms the large flat crystals so much in demand in America. These are broken into smaller pieces and packed in stone jars for shipment. Sometimes it is dissolved in chloroform, from which it crystallizes in about a week. The crystals are freed from the mother liquor by a centrifugal machine, and dried in a closet heated by steam. The mother liquor which is thrown off can be used to dissolve a new portion instead of chloroform.

Having sketched the production of chloral on a large scale, we may now look after the by-products, which play such an important role.

Chloride of manganese is formed in immense quantities, and unfortunately finds but little use in the arts. Schering has collected

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in two years about 5,000 carboys of this solution, and no small capital is invested in the containing vessels, so that at last it has become necessary to throw it away.

The second by-product is the hydrochloric acid from passing chlorine through the alcohol and from the first distillation. This, of course, is returned to the chlorine generator.

The etherial liquid which collects in the last carboy, under the hydrochloric acid, is also interesting. According to an analysis by Dr. Kræmer of Berlin, it is a mixture of chlorides of ethylene and ethylidene, both of which are employed in medicine. The chloride of ethylidene was also introduced by Dr. Liebreich as an anæsthetic. These liquids are separated by fractional distillation in the usual manner in copper retorts. The free hydrochloric acid contained in them must, of course, be neutralized with soda or potash, and the liquids dried over chloride of calcium. Although their boiling points differ by 23° C., it is scarcely possible to absolutely separate large quantities of them.

The next and last by-product is the sulphuric acid used in expelling the hydrochloric acid. This is sold at a low price for use in other manufactories where its impurities do no harm, as, for instance, in making soda water.

TASTELESS SALTS OF IRON.*

BY CHAS. G. POLK, M.D.

The recent attention that has been bestowed upon the quadruple salts of iron indicates that they will come into general use, and if able to retain popular favor, may be at some future day, embodied in the Pharmacopœia. As far as I know, the only literature on the subject is an article by R. Rother on the ferric phosphate with ammonio-citrate, the article by Mr. Creuse published in the last number of the *Druggists' Circular*,† and a brief sketch by myself in the February number of the *Journal of Pharmacy*, in which I republished Mr. Rother's formula from the *Pharmacist*. The most satisfactory article on the subject was submitted about one year ago to the editor of the American *Journal of American Sciences* by Dr. Alonson D. Hauverman, and its publication declined on account of its strict pharmaceutical character. During the summer of 1866 Dr. Hauverman and myself experimented with the different phosphates of iron, with the chloride, acetate, and iodides of iron with alkaline bases. The most valuable of these, the phosphate with citrate of ammonium, was considered by me in an

* From The Druggists' Circular.

† Cand. Pharm. Jour., No. LXIII, p. 428.

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article published in the February number of the *Druggists' Circular*, and also in the *Journal of Pharmacy;* as well as the phosphate with potassic citrate and ammonio-citrate—the latter being Mr. Rother's formula. By reference to that journal it will be seen that I use considerably less phosphate of sodium than does Mr. Creuse.

Are there any merits in those proposed tasteless salts which entitle them to consid.ration in the presence of the already over-extended preparations of iron? I think there are. The soluble phosphate contains in combination tribasic phosphoric acid, and consequently possesses, in addition to its chalybeate, the energies of phosphoric acid. Pyrophosphate of iron, holding in combination the bibasic phosphoric acid, which seems to possess no remedial properties, is therapeutically inferior to the proposed preparation. In fact, my experience with it, which has been quite extensive, leads me to esteem it (the soluble phosphate) the most efficient of the ferric salts. A more permanent preparation than the syrup need not be desired. The taste is even preferable to the pyrophosphate. Like that salt, it is usually well tolerated, seldom produces nausea, headache, or nervous disturbances. In cases attended with enfeebled digestive powers, with marked sensitiveness, this is the best chalybeate I have ever used. More efficient than the pyrophosphate, even more readily combined with aromatic tinctures, it is especially adapted for the so-called ferrated elixirs. By making a rich aromatic tincture with fresh orange peel, cardamom, and caraway seed, dissolving the alkaloids in it by aid of citric acid, and adding the syrup of the ferric phosphate with sufficient sugar dissolved by aid of gentle heat to form a syrup, an elixir of the phosphate of iron, quinia, and strychnia can be obtained. The syrup of the ferric phosphate with potassic citrate is best made by decomposing sixteen fluid-ounces of the solution of the sulphate of iron by eighteen ounces of phosphate of sodium, washing the magma, evaporating to twenty ounces, and adding thirty-two ounces of sugar, and forming by heat thirty-two ounces of syrup. The peculiar olive-green distinguishes it from the apple-green of the pyrophosphate.

This syrup contains fifteen grains of phosphate of iron to each drachm. If therapeutically inferior to the ferrous salts, it has a wider range of application, and can be used in cases where they will not be tolerated.

Syrup of the Ferric Iodide.—It seems to me that every physician and pharmacist must hail the introduction of this new remedy with delight. As the inventor of this preparation, Dr. Hauverman's claim dates back to July, 1866, although I believe Mr. Creuse was the first to call the attention of the profession to its existence and merit, and has had it patented. It fills a void long sorely felt. The instability of the ferrous iodide, its liability to undergoing change at the slightest exposure, its tendency to disorder the

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stomach, its disagreeable taste, are all remedied in the ferric iodide. While doubting its equal efficacy with the ferrous iodide, its many advantages entitle it to our favor, and must sooner or later place it on the officinal list. The constitutions of many nervous, frail, scrofulous persons, which cannot tolerate the ferrous iodide, owing to the tendency to iodism, to derange the stomach and induce nervous troubles, take the ferric iodide without the slightest inconvenience.

The principle of quadruple ferric preparations can be applied almost indefinitely, but such a list is unnecessary, and does not supply a want except in the two preparations here considered.

Philadelphia, Pa.

LACTOPHOSPHATE OF LIME.*

BY MM. MENIERES AND LANGELLE.

M. Menieres points out that lactophosphate of lime, when pure, is soluble in water and in alcohol, and presents the reactions of lactic acid and of phosphate of lime, whilst the lactophosphate of lime found in commerce is insoluble in water and alcohol, there being separation of lactic acid which remains in solution and precipitation of phosphate of lime. The syrups and medicinal wines prepared with these two products would therefore be very different.

From experiments made by M. Ménières he has concluded that commercial lactophosphate of lime is simply a mixture, and that a syrup of lactophosphate of lime cannot be prepared except with lactic acid and the biphosphate of lime. The following is the formula which he recommends for the preparation of this syrup:—

Lactate of Soda, very white and in plates	1 gram.
Soluble Acid Phosphate of Lime	4 grams.
Syrup of Sugar, very white	395 "

Dissolve the two salts together in a small quantity of distilled water, at a very low temperature, and then add the solution to the syrup cold. A very limpid product is so obtained, which may be flavored with a few drops of essence of lemon.

M. Langellé recommends the preparation of syrup of lactophosphate of lime in the following manner, but this process requires a much longer time for its execution:—

*From the *Repertoire de Pharmacie*, translated in the *Pharmaceutical Journa and Transactions.*

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Phosphate of Lime, pure and dry, in powder	25 grams.
Pure Hydrochloric Acid	40 "
Concentrated Lactic Acid, *q. s.*, about	50 "
Powdered White Sugar	1500 "
Distilled Water and Pure Solution of Ammonia	*q. s.*

Gelatinous phosphate of lime is prepared first by suspending the dry phosphate, in a suitable vessel, in about five times its weight of distilled water, adding the hydrochloric acid and stirring the whole together with a glass spatula. In default of pure phosphate, 32 grams of bone-ash may be used. The solution is effected pretty quickly, and it is then immediately precipitated by a sufficient quantity of pure ammonia, using a slight excess of alkali and stirring briskly. The precipitate is afterwards thrown upon a paper filter and washed with distilled water until the precipitate produced in the washings by nitrate of silver is soluble in both ammonia and nitric acid. The gelatinous phosphate being now freed from chloride of ammonium—and if bone-ash has been used, from chloride of calcium—is fit for use. It should be allowed to drain upon the filter for about twenty-four hours; then it should be carefully collected by spreading out the filter on blotting paper, and heated very gently in a capsule until transformed into a liquid pulp. This pulp should be placed in a tared flask and about two-thirds of the lactic acid added at once and briskly agitated, in order to dissolve as much as the acid is capable of dissolving; afterwards a small quantity of the remaining acid added from time to time, shaking the flask after each addition. It is not desirable to seek to obtain a clear solution; this would risk the employment of an excess of lactic acid, which, in order to prevent the production of a syrup which would be too acid, it would be necessary afterwards to saturate with more gelatinous phosphate of lime. It is a good plan however to use a *very slight* excess of lactic acid, which gives to the syrup an agreeable flavor. When saturation is effected 800 grams of the liquid are completed either by the addition of distilled water, or of a mixture of distilled water and some aromatic distilled water, such, for instance, as orange-flower or peppermint water. This liquor is next filtered upon 1500 grams of sugar, broken in small fragments, and stirred with a spatula to assist the solution. Finally it is passed through muslin.

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VERMILION.*

Of all the various light red paints vermilion ranks as the most brilliant. Although not so dazzling to the eye as carmine, or so vivid in its hue as iodine scarlet, still the natural richness and splendor of its tone makes it pre-eminently a favorite, being greatly preferred above all other reds. It is delicate in body and possesses the merit of grinding as fine as oil itself; it looks well, works smooth, wears good, and covers as much space as any other known color.

Vermilion being of a red shade, is classed as a color among the primaries. Field, in his excellent grammar on paints, says: "Red, being a primary and simple color, cannot be composed by a mixture of other colors; it is the most positive of colors, holding the middle station of the primaries, standing between yellow and blue, also in like immediate relation to white and black, or light and shade."

Owing to high price at which vermilion is sold, its use is mostly restricted to the finer grades of work; it is principally used as a finishing or covering for work whose base is composed of cheaper material. It is largely used for ornamentation, lettering, striping and shading.

Nearly all trades that use colors or dyes make use of vermilion. House, sign, fresco, carriage, car and other painters, also paper makers, ink manufacturers, dyers, shade makers, toy manufacturers, and others, all use vermilion to a greater or less extent. Drum makers use it for the hoops of drums, or account of the showy finish it gives to their work.

On account of its ostentatious quality the tea trade throughout the United States have generally adopted it as a paint for the purpose of decorating their stores inside and out, and by so doing have given a distinctive feature to their business which is readily recognized by the public. Carriage makers use it largely as a finish for the bodies of light carriages, and very fine work is turned out by using different shades, which are produced by adding a darker color in various proportions with it.

In fresco painting it occupies a prominent position. In using it for this purpose care should be taken not to put it on too freely; it should cover but a small space in proportion to the other colors used, or it will, on account of its brilliancy, be apt to produce too glaring an effect.

Show-card writers use it very freely, its warmth and light being peculiarly adapted to show off their work in attractive style. It is also used to a great extent as a combination with other colors, and, owing to its positive character, forms the principal basis of all the endless variety of hues which its admixture with different colors

*From the Oil, Paint & Drug Reporter.

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creates; it sets off best with white, and is used most largely in combination with it.

Vermilion or (properly speaking) quicksilver vermilion is manufactured from the red sulphuret of mercury, commonly known as cinnabar; there are several processes for making it, but the principal one is to grind the cinnabar to a fine powder, and then sublime it in a glass vessel with a worm-like top, over a strong fire, when a vapor will ascend and form an incrustation in the top of the vessel, which, when scraped off and reduced to a fine powder, is vermilion. In grinding, the smaller the quantity ground, and the smoother and harder the stone used, and the greater the weight brought to bear, the finer the color will turn out.

Cinnabar is the native ore from which mercury is usually extracted; if pure, it consists of one atom of mercury and one of sulphur, or by proportion 86.2 of the first to 13.8 of the second.

On account of the impurities found in the native cinnabar, manufacturers find it cheaper to prepare it artificially when vermilion is to be made from it. The process of preparing it is simple. Take 12 ounces of sulphur, and put it into an iron pot and melt it, then put 4 lbs. of mercury into a thick linen cloth bag, and press it into the liquid sulphur, taking care to stir them well with a wooden spatula during the process, until they are thoroughly combined. When they arrive at this stage the mass may be taken from the fire and cooled, when you have a substance the same as natural cinnabar.

Vermilion is frequently debased by mixing red lead with it. It is easy to detect this adulteration by placing a small quantity of it on a red-hot iron; if pure, it will evaporate entirely; if impure, there will be an earthly residue.

Vermilion is largely manufactured in Austria, Germany, England, China, and this country.

All foreign makes are largely imported in the United States, the quantity received at New York alone, from January 1st to March 1st, 1873 (two months), being 11,391 lbs., on which a duty of 25 per cent. ad valorem was paid.

Of the various makes of vermilion the Chinese is considered the best, bringing the highest price, retailing at from $1 50 to $1.75 per lb. The process they follow in making it is not known to the manufacturers of the outside world, the natives having jealously guarded the secret for centuries. It is supposed that the process they use is similiar to the one given in this article, the finer grade of color which they produce being accounted for by the punctilious care and labor which the Chinese proverbially as a nation are noted for expending on all their manufactures.

The vermilion interest in the United States is at present principally confined to three leading houses, who manufacture largely and sell all they can make.

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They claim that their color is in every way equal to the best foreign, and say that the difference cannot be detected, except by an expert. Their product has been exported to some extent, principally to South America, but not in sufficient quantity to class it as a staple export The main bulk manufactured is consumed here in this country.

The decided success which the parties manufacturing this color have met with, combined with the rapidly increasing demand, has stimulated others to look into the matter, and the result of the investigation has been so satisfactory that a leading Philadelphia house has engaged the services of a chemist now residing in Germany, to come over to this country and superintend its manufacture, which they propose to commence on a large scale this coming May.

We have confidence that their enterprise will meet with deserved reward, and in no way interfere with the interest of their competitors.

We think that there is room for all, and that each succeeding year will witness an increasing demand and a more extended market, and predict that at no distant future the vermillion interest will occupy a prominent position among the great manufactures of the United States.

ON PAREIRA BRAVA.*

BY DANIEL HANBURY.

(*Concluded from page* 46.)

The root of *Chondodendron* cannot be confounded with the stem, which is woody and fibrous and of a different structure. Geoffroy's description of the former is correct so far as it goes. I may add that the numerous specimens I have seen present but little variation. All are portions of a tortuous, branching root, wrinkled longitudinally and having transverse fissures, constrictions, or ridges. The root is externally of a blackish-brown, and light yellowish-brown within. In Mr. Francis's drug there are young roots having the remnants of green aerial stems rising from their upper part. In Mr. Peckolt's specimen the aerial stems are fully preserved, as thick as the finger and many feet in length. The root seems to be gorged with juices so that under the penknife it cuts more like a very hard fat or wax than as a fibrous wood. In transverse section it does not display zones of the same regular and beautiful definition that

*From the Pharmaceutical Journal and Transactions.

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one sees in ordinary Pareira Brava. In the root of Chondodendron there is a large well-marked central column composed of wedges diverging from a common axis, around which are arranged a few concentric rings intersected by wedge-shaped rays which are often irregular, scattered, and indistinct. The axis is not often eccentric.

In *Cissampelos Pareira* the root and stem are nearly alike in structure, and in transverse section show no concentric rings. Those received from Jamaica, which were the largest that could be collected, were rarely so much as an inch in diameter, and in many localities it is difficult to obtain the stem or root thicker than a goose quill.

The Pareira Brava of English commerce is mostly of larger size than the root of *Chondodendron*, and is a much more woody substance. Its internal structure, which is familiar to most druggists, is very remarkable, consisting of a series of layers which are often developed exclusively in one direction. Nothing is known of the botanical origin of this drug, beyond the fact that the structure of the wood is that of the order *Menispermaceæ*.

Of late years even this sort has become rare, and its place has been taken by a drug completely devoid of medicinal power. This latter consists of cylindrical woody truncheons which have an internal structure not very diverse from *Pareira Brava*, though generally less eccentric, with always a distinct central pith. The wood is tasteless, and often seems to have been injured by damp. It should be rigidly excluded from pharmaceutical use.

Several other sorts of Pareira Brava are known—at least in South America. One, of which there is a parcel now in the London market, is remarkable for its large size, and for being internally of a fine yellow. As it is also very bitter, it probably contains berberine.

Another sort is derived from *Abuta rufescens* Aublet, a well-marked plant growing in Guiana and North Brazil. Specimens of a thick woody root, marked *Abutua grande* or *Pareira Brava grande* and attributed to this species have been sent to me by Mr. Correa de Mello; they exhibit numerous concentric layers traversed by very distinct, dark medullary rays, the inter-radial spaces being white, and rich in starch. It is apparently a well-marked sort, and one I have not seen in commerce.†

In conclusion I strongly advocate returning to the use of the root of *Chondodendron*, which is the drug on which the reputation of Pareira Brava was originally founded.

† When Aublet was in Guiana, 1762-64, the stems of *Abuta rufescens* were shipped to France as *Pareira Brava blanc*. He says there is a variety of the same with the woody parts reddish, which is known in Cayenne as *Pareira Brava rouge*. He also describes and figures a plant he calls *Abuta amara* or *Pareira Brava jaune*, which has the wood yellowish and very bitter. This last is, I think, identical with the yellow wood of which, as I have said, there is a quantity now on sale as "*Pareira Brava*."—See *Hist. des Plantes de la Guiæne Francoise*, i. (1775), 618-21, tab. 250-51.

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In Brazil this root is regarded as the legitimate sort, and is still held in the highest esteem.

Though it has not been clearly recognized by European writers, it is not altegether unknown. Guibourt * seems to have been acquainted with it and even correctly surmised its botanical origin. It is the root figured by Gobel and Kunze, † and there is an old specimen of it in the Pharmaceutical Society's Museum marked *Pareira Brava.* I myself met with it in the market in 1862. Lastly Dr. Squibb has pointed out ‡ that some small lots of Pareira Brava imported into New York in 1871 consisted in large part of a drug entirely different from any previously seen, and that he at first supposed it an adulteration; but that subsequent examination had shown him that the drug in question agreed well with the older descriptions of Pareira Brava, and especially with Pomet's figure, so that he was convinced it was true *Pareira Root.* From Dr. Squibb's description I feel sure that the drug before him was the same as that to which I have called attention in the present paper.

There can be no doubt that it would become plentiful if the demand should arise, and that it would advantageously replace the worthless kind now found in the drug trade.

ON THE NEW SYRUP OF THE IODIDE AND TINCTURE OF THE CHLORIDE OF IRON.‖

BY JOSEPH P. REMINGTON.

The so-called tasteless iron combinations, which have recently been brought to notice by J. L. A. Creuse, of New York, have attracted much attention of late, and an entire revolution in the manner of making a most useful class of preparations has been threatened.

The advantages claimed for the innovations are numerous: freedom from *nauseous* taste (they cannot certainly be called tasteless) ready solubility in water, non-liability to change in dispensing, little or no destructive action on the teeth, miscibility without decomposition with bark and other desirable tonic preparations.

Setting aside for the present the theories which may be brought forward to prove their composition (the rationale of new compounds often being mere collections of symbols twisted into a shape that will explain on *paper* a reaction), the first thoughts that occur to a practical pharmacist in connection with them, are:—

* *Hist. des Drog.*, ed. 4, iii. (1850) 671.

† *Pharm. Wahrenkunde*, ii. (1830-34) tab. 13. fig. 1, b-c.

‡ *American Journal of Pharmacy*, March 1, 1872, 107.

‖ From the American Journal of Pharmacy, September.

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Can they thoroughly replace the old and disagreeable remedies that have been prescribed for years past?

Can desirable processes be devised, whereby every pharmacist may make in his own store the new preparations?

Is the claim for stability sustained by experience?

It is the intention of the writer to attempt to answer these questions.

First, in regard to replacing the old remedies. Iodide of iron has been used constantly since 1824, and it is regarded as one of the very best alterative and tonic preparations; yet the objections to its use are numerous, and were it not for its intrinsic merit it would have slept long ago in an unhonored grave; it is always unpleasant to take, even when freshly prepared, and becomes more so as it gets older.

In practice, but few pharmacists prepare their own syrup; reliance is placed on the general market, and the results, of course, are variable. A syrup one week or two years old may be purchased, possessing various degrees of color and acridity (agreeing better, however, in the latter quality), and neither the patient nor physician are probably aware of the cause, and practitioners are frequently debarred from prescribing for delicate persons and children on account of the disturbance to the digestive organs.

The new syrup of the iodide of iron does, in the writer's opinion, remove the objection to the old preparation. It has fallen to my lot to make about twelve gallons of the improved syrup at various times, which has been dispensed, and has been used by physicians in their practice for the usual diseases where the old syrup was indicated.

It seems to answer well in scrofulous and syphilitic diseases, in obstinate skin affections, and as an internal remedy where morbid secretions of the glands exist, but particularly for delicate females and children of scrofulous habit requiring an alterative tonic. Its taste is pleasant, the teeth are not discolored, and the digestive functions were not disturbed by its use in any of the cases that were reported. A formula for the preparation is subjoined, which is based on the researches of Creuse in this direction.

New Syrup of the Iodide of Iron.

Take of—

Re-sublimed iodine, ...	378·9 grains.
Iron wire (card teeth), . . .	90 "
Distilled water, ...	2 fluid ounces.
Citric acid (dry), ...	408 grains.
Potassium Carbonate (pure), . .	475 " or q.s.

Weigh accurately 252·6 grains of the iodine, and place in a beaker or flask of at least four fluid ounce capacity, then add to it the card teeth and half a fluid-ounce of distilled water, cover the beaker with

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a watch glass, and agitate occasionally until the liquid has acquired a green color and lost the smell of iodine (care should be taken about this point; all the iodine should be in the state of a ferrous salt), filter the liquid from undissolved iron, rinse the iron with a small quantity of the distilled water, pour on the filter, and finally rinse the filter; now add to the filtrate the remaining 126·3 grains iodine, and allow it to dissolve; it forms a rich ruby red solution. Place 406 grains of the citric acid in a small evaporating dish, add one and a half fluid ounces of distilled water, and apply heat until the acid dissolves and the liquid boils; without removing from the fire add, by small portions, sufficient potassium carbonate to neutralize, avoiding an excess; if a slight excess should happen to be present, correct it by adding the two grains citric acid reserved; now pour as much of this solution of potassium citrate while hot into the red solution as will change the color to a bright green, and make up the measure to twenty-six fluid-ounces with simple syrup. The finished syrup contains about five grains of the salt in each fluid drachm, and the dose will be from one-half to one teaspoonful.

The new tincture of the chloride of iron can replace the old with advantage, in most cases where the tonic effects are alone desired without any styptic action.

New Tincture of the Chloride of Iron.

Liq. ferri chloridi, U.S.P.,	1 fluid ounce.
Citric acid,	544 grains.
Sodium carbonate,	1000 " or q. s.
Water (distilled),	1 fluid ounce.
Alcohol,	a sufficient quantity.

Dissolve the citric acid in the distilled water, and heat to the boiling point, gradually adding the sodium carbonate until the acid is saturated (the quantity varies with the amount of moisture present in either), mix with the iron solution, which will now acquire a beautiful green color, and make up the measure to four fluid-ounces with alcohol.

One of the strongest points in favor of this series of preparations is that they can be made to offer a great variety of desirable combinations. The finished green solution of iodide of iron may be evaporated at a low heat, and, as suggested, a salt formed which can readily be made into pills of three grains each, and, of course, requiring no insoluble coating to protect them; it may be dissolved in water in almost any quantity, forming a simple solution, or in syrup to form a syrup of the iodide of iron of any required strength. It may be administered in combination with compound tincture of cinchona and compound tincture of gentian, cr it may really, *when added*, put some virtue in the numerous tonic elixirs that are being prescribed so largely throughout the country.

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A formula is appended for an elixir which has acquired some sale in this city. The writer does not wish to be considered as endorsing it, however.

Elixir of Gentian with Chloride of Iron.

Tincture of chloride of iron (new)	6 fluid-drachms.
Tincture of cardamom,	½ fluid-ounce.
Fluid extract of gentian,	3 fluid-drachms.
Alcohol,	2 fluid-ounces.
Oil of cinnamon (true)	1 drop.
" coriander (fresh)	1 drop.
" anise,	1 drop.
" orange,	3 drops.
Simple syrup,	3 fluid-ounces.

Water, sufficient to make 16 fluid-ounces.

Dissolve the oils in the alcohol, and having mixed the other ingredients together, incorporate all thoroughly, adding sufficient water to make one pint and filter. Dose: A dessertspoonful. This preparation contains five minims tincture of the chloride of iron in each dose; enough gentian is present to flavor the elixir somewhat, and give it part of a name; and not enough to injure the greatest disideratum—a pleasant taste.

PANCREATIC JUICE AS A THERAPEUTICAL AGENT.*

The increasing employment of the pancreatic juice in pharmacy renders any process for its preparation valuable, specially when such process is within the reach of practitioners in even the most remote country districts. Dr. Merkel, of Nuremberg, has given the following directions for preparing the pancreatic fluid: The pancreas of a bullock is finely minced and rubbed up with 250 grammes (about 8 ounces) of glycerine. When used as a nutritive enema, one-third of this is thoroughly mixed with from 120 to 150 grammes (a gramme is 15.5 grs.) of finely minced meat, and immediately injected into the rectum. This is said to be readily digested by the intestines. If the mixture is allowed to stand too long before using, the meat swells up and renders the injection difficult.

For feeding by the mouth in the treatment of the wasting diseases, both of children and of adults, we would suggest that a very satisfactory pancreatic fluid can be prepared as follows: The pancreas of either the bullock or pig may be used.

A pound of fresh pancreas is finely minced, and an equal quantity of glycerine added at about 120° Fahrenheit. The mixture is

*Medical Archives.

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put in a vessel, when the pancreas can be crushed and intimately mixed with the glycerine, and kept at this temperature in a water-bath for twenty-four hours, being occasionally stirred. The glycerine is then carefully drained off, as completely as possible, and the pancreatic magma is carefully washed with about six or eight ounces of water, so as to extract the remainder of the glycerine. This is also carefully drawn off and filtered, and evaporated to one half, and then mixed with the glycerine.

This makes a perfect and very agreeable emulsion, with cod-liver oil or any other form of fat. Cod-liver oil mixed with this, in the proportion of one part to ten, gives a fine and palatable emulsion, very easy of digestion.

Cod-liver oil, it is said, may also be successful emulsified, by adding to it crushed bits of pancreas, and keeping it at a temperature of 140° Fahrenheit for six hours; thus emulsified, it rapidly passes into the circulation from the stomach.

It is well known that nearly all the cases of wasting disease die from pure inanition and complete defection and incapacity of appropriation and nutrition. Very many of these cases will recover if we can but present material to the assimilating organs readily prepared for absorption. By this means, new impulses of force are acquired, by the entrances of those materials into the chemico-vital action common to organic bodies.

By mixing one or two teaspoonfuls of this glycerine extract with a half pint of milk, thickened with a mixture of three parts wheat flour, and one part pure malt flour, we have a pure and perfectly assimilable diet for all such cases, on which they thrive remarkably.

The cod-liver oil emulsified by this pancreatic extract forms the basis of a most successful treatment in all wasting diseases, under which eighty per cent. will recover.

NOTE ON THE REPUTED VALUE OF POLYGONUM AVICULARE, L. FOR STONE.*

BY JOHN R. JACKSON, A.L.S.

Members of the order Polygonaceæ are far from being rare, either to the British, Continental, or American botanist; least of all, perhaps, is the knot-grass (*Polygonum Aviculare*), which generally flourishes best where its presence is not wanted, and defies eradication. With such quantities of this weed at our very doors, it seems somewhat ludicrous to import it from ever so short a distance, let

*From the Pharmaceutical Journal and Transactions.

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alone from Russia, but such is the case that amongst the numerous contributions of vegetable products, "good, bad, and indifferent," which are constantly being received at Kew, a bundle of knot-grass recently arrived from Berdiansk, with a wonderful account of its extraordinary power of curing stone and gravel diseases. Our correspondent says his attention was attracted to it by a case which fell under his own observation—that of a man who suffered so excessively, that he was told by the doctors he must undergo an operation; in the meantime, a quantity of the *Polygonum* was given him by a person who happened to hear of the case, the sufferer drank two tumblers full of the decoction, and, in about fifteen minutes, he felt an intense pain in the bladder and surrounding regions, as if the parts were being torn to pieces, this was immediately succeeded by an irresistible desire to pass water, which was done with great pain, but nothing could check the force of the bladder in ejecting the water, which brought away with it a great quantity of gravel and bits of stone, some of the pieces passed were very large, but the instant they came out they opened into flakes and broke up into thin plates. The man is stated to have quite recovered, and the person who gave him the *Polygonum* is said to have been distributing it in all such cases that have come under his notice for the last thirty years, and always with success.

The following is given as a suitable way of taking the medicine: Take a good, liberal handful and boil gently in six tumblers of water, till it is reduced to about four tumblers. The dose is one or two tumblers to be taken in the morning on an empty stomach. In bad cases it is given several times throughout the day, but diet must be strictly kept. As a purifier of the blood, one tumbler of a weaker decoction is recommended to be taken every morning.

The discovery of such an apparently valuable medicinal agent by anyone not sufficiently acquainted with plants to recognize it must have been a source of much gratification. Emetic, carthartic, and diuretic properties have been ascribed to many of the Polygoneæ, and even to *P. aviculare* itself. At one time it was stated that the plant was an excellent febrifuge, and it was used in Algeria, and other parts of Africa, as a substitute for quinine. In 1845, a French doctor reported upon it has being an excellent remedy for chronic diarrhœa, the means of applying it being in form of a strong decoction.

At the present time the only really valuable medicinal product of the *Polygoneæ* is rhubarb.

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HOMŒOPATHIC PILULES.

With a view of throwing some light upon the question whether the beneficial results sometimes reported as following the use of homœopathic medicines were due to imagination or to the action of a powerful drug, some experiments have been made with the variety of preparations known as pilules, and these are described in the April and July numbers of the *Practitioner*. Pilules are different from globules; they are about as large as No. 5 shot, and obviously might contain a powerful dose of any energetic substance. The dilution chosen was that known as the second. Each pilule, the average weight of which was 0·6 grain, should accordingly contain 0·00006 grain of the drug. This quantity, in the drugs chosen, is fairly within the reach of analysis.

Sulphate of Copper Pilules.—First sample, no copper could be detected in 100 pilules; second sample, no copper could be detected in 200 pilules. The quantity of sulphate of copper in the above pilules should have been 0·006 and 0·012 grain respectively. If even as little as 0·0001 grain of the sulphate had been present it would have been detected. These samples therefore contain much less of the drug than they should have done (120 times less in the second sample), and in all probability no copper at all was present.

Corrosive Sublimate Pilules.—It was just possible to detect mercury in 200 of the pilules. The amount was, however, less than corresponds to 0·0005 grain of corrosive sublimate, whereas 0·012 grain of this salt should have been present.

Nux Vomica Pilules.—No strychnine could be detected, even when 300 pilules were employed. Three hundred pilules should have contained about 1-10000 grain of strychnia. Now, so small a quantity as 1-70000 grain of strychnia is well known to give distinct reactions to chemical tests, but no reaction could be obtained in the present case.

Aconitum Napellus Pilules.—First sample: no aconite could be detected in 100 of the pilules (weight 80·85 grains). Second sample: same result (weight of the 100 pilules, 96·40 grains). Comparative experiments showed that had these pilules contained as small a quantity even as 1-8000 of a grain of aconite, it would have been detected with certainty. This corresponds to about the 160th part of a grain of the extract of aconite; the quantity which should have been present is from four fifths to nearly 1 grain, or more than 100 times more.

Belladonna Pilules.—First sample: no atropine could be detected in 100 pilules (weight 80·39 grains). Second sample: same result (weight of 100 pilules, 81·00 grains). Comparative experiments showed that by means of chemical tests alone, as little as 1-6000 of a grain of atropine would have been detected with cer-

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tainty. This corresponds to about 1-30 of a grain of the extract of belladonna, whereas as much as four-fifths of a grain, or 24 times as much, should have been present.—*Pharm. Jour & Trans.*

CIVET AND AMBERGRIS.

The following extract is taken from a paper on Perfumes, read by Mr. James Paton, before the North British Branch of the Pharmaceutical Society, and reproduced in the *Pharmaceutical Journal and Transactions:*

"Civet must have been in the days of Shakespeare a very fashionable perfume, judging from the frequency of his allusions to that substance; and coming down even to the time of Cowper, we find the substance singled out for mention, though perhaps not what Exhibition juries term 'honorable mention.'

> 'I cannot talk with civet in the room,
> A fine puss gentleman, that's all perfume.'

"It does not appear that the fine puss is here put in with any special purpose, but it occurs quite appropriately when we know that civet is yielded by several species of animals of the cat tribe, chiefly by *Viverra civetta*, or the civet, which occurs in the hottest regions of North Africa and Abyssinia, and *Viverra zibetha*, or the zibeth, a native of the Phillipine Islands. Besides these animals there are various allied species of *Viverra* and *Viverrula*, which occur throughout India, all possessed of a civet pouch. The civet apparatus is present in both the male and the female, and consists of two glands or sacs, placed in the neighborhood of the genital organs, the inner surface of the sacs being pierced with a number of apertures communicating with the glandular follicles which secrete the material. Civets used to be kept in confinement in Dutch towns for the purpose of growing the scent; and at the present day the animal is reared in some parts of Africa in a semi-domesticated condition, and has its civet apparatus cleaned out with a long wooden spoon twice or thrice a week. Civet has in its natural condition anything but a pleasant odor, but in a highly dilute condition it combines most effectively with other odors and imparts to them both permanence and pleasing floral fragrance.

The source of ambergris was for a very long time a profound mystery, and the guesses hazarded about its origin were about as numerous as they were ridiculous. It was found sometimes floating on the surface of the open ocean, and most frequently cast up upon shores so far apart that it can scarcely be said ambergris belongs to one part of the sea more than another. From the coasts of Greenland, Iceland, both sides of America, the islands of the

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Indian seas, China and Japan, it has been brought. It was supposed at one time to be a balm which grew on sea cliffs just as fungi do on trees; then the dried saliva of whales, the excrement of birds, condensed froth of the sea, etc., etc. It is really formed, whether as a morbid secretion or not is not quite evident, in the alimentary canal of the sperm whale, from specimens of which it has frequently been extracted. Though it is usually obtained in pieces of from 2 oz. to 1 lb. it has been found in enormous masses. In 1691 a piece was found on the beach in county Sligo weighing 62 pounds, which sold in London for above £100. In 1095 the East India Company had a mass weighing 160 lbs., and it is said that pieces of as much even as 860 lbs. have been found, which is rather too much for the whale to contain, or for us to swallow comfortably. Ambergris has a mild, sweet odor, not of much value by itself, but it mixes effectively with other perfumes, giving them ethereal odor and some amount of permanence. It is in great favor among oriental nations, where musk, ambergris, sandalwood and rose may be said to be the basis of the system of perfumery."

HYOSCYAMINE.*

Dr. G. Merck has made some interesting observations on the substances commonly known as hyoscyamine, which make the analogy between the alkaloid of henbane and those of hemlock, tobacco, etc., much eloser than it has been hitherto.

In most chemical works hyoscyamine is described as being crystalline, but recent observations agree in supporting the opinion that it is amorphous. It is only Thorey who reports that he has obtained it in the form of crystals. Merck obtained it only as a colored soft amorphous mass; but he found that when this was submitted to careful distillation in an atmosphere of hydrogen a colorless distillation was obtained, which he considered to be the true base, and in this respect to stand together with conia and nicotine.

Thus prepared, hyoscyamine is described by Merck as a colorless, rather oily liquid, in appearance and smell very like conia.

It is readily soluble in alcohol and ether, tolerably so in water. It is only partially soluble in benzol or chloroform. In contact with air it rapidly becomes brown, thickens, and at the same time gives out an intensely disagreeable smell. In this condition it is no longer completely soluble in ether.

The liquid has a strong alkaline reaction, and it completely neutralizes acids. The salts are very soluble, and only with difficulty obtainable in crystals.

**Neues Jahrbuch fur Pharmacie*, October, 1872, p. 203, in *Pharm. Jour. & Trans.*

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ANTAGONISM BETWEEN OPIUM AND BELLADONNA.

During his residence in China, Dr. Johnston *(Hospital Reports*, Shanghai, March, 1872) has had great experience of opium-poisoning and the ill effects of opium-eating. During the last seven years he has treated upwards of three hundred cases of opium-poisoning. He first employed atropia in 1869. He employs it hypodermically in the severer cases, where the patient is profoundly comatose. In milder cases, emetics, the stomach-pump, cold douche, and constant exercise are generally sufficient. It is in the worst cases that atropia displays its wonderful effects; for instance, where the pupils are firmly contracted to a pin's point and immovable, the conjunctiva and the cornea insensible to touch; the face pale; the lips, eyelids, and nails livid; the pulse weak and irregular; the breathing slow and stertorous, and the extremities cold. In such cases, he usually injects hypodermically half a grain of atropia. Within ten or twenty minutes the pupils begin slowly to dilate; and, after an hour or more, the face becomes flushed; the breathing soft, without stertor; and the pulse stronger. Within two hours the full effects of the drug (atropia) are manifest, viz., "widely dilated pupils, flushed face, hot skin, tranquil slow breathing, diminished frequency and increased strength of pulse, followed by calm and tranquil sleep, from which the patient is easily wakened after three or four hours." If within two hours the first dose fail to dilate the pupils, flush the face, and render the breathing slow, steady, and tranquil, he repeats the injection. In cases where the coma is not profound, he first employs a quarter of a grain of atropia, repeating the dose if the first be insufficient. He says: "I have observed very sudden and very unfavorable changes set in rapidly, even in the mildest cases of opium-poisoning. This has happened so frequently, that I have come to the conclusion that whenever there is contraction of the pupil and great drowsiness, after the evacuation of the contents of the stomach, it is always advisable to adminster a small dose of atropia. I may remark that in no instance have I seen any bad effects following the subcutaneous injection of atropia."—*London Medical Record.*

TOILET SOAPS BY THE COLD PROCESS.

There are two methods by which toilet-soaps may be prepared; these are known as the hot and cold processes. The fine English soaps are chiefly made by boiling, but in America most of the fancy soaps are made by the cold method. When made by boiling, a weak caustic lye is used, and the soap is boiled until it is almost perfectly free from alkali. The soap, which is then in solution, is

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separated from the water by "salting out;" the glycerine, of course, remains in the water and is lost. The old process is briefly as follows: The fat is melted in a well-cleaned iron or copper kettle at a low temperature, then filtered through fine linen or muslin into another kettle, and cooled to 104 Fahr., or lower; a very strong lye, usually about 36° B, is added, 80 pounds of fat requiring about 40 pounds of lye. It is then stirred with a wooden paddle until a ring made by stirring may be recognized. At this time the coloring matter and perfumery are added. It is next run into frames lined with muslin, closed and left for twelve hours, by which time saponification will have taken place, the temperature rising to over 175° Fahr. It is now ready to be taken from the frame, cut, dried, and sold. Soaps made by this process are softer and pleasanter, because they contain the glycerine; but they are unfortunately more or less alkaline, no matter how much care is bestowed upon their preparation. A Frenchman named Mialhe claims to have invented a method of neutralizing the free alkali, and thus combining the advantages of both methods, and making a perfectly neutral glycerine soap. This is accomplished by taking the ordinary soap prepared by the cold process, shaving it up fine, and spreading it out on grates in suitable chambers, where it is exposed to the action of carbonic acid gas until all the free soda is converted into the bicarbonate of soda. Thus a perfectly neutral soap is obtained, which contains all the glycerine present in the grease, and a certain quantity of bicarbonate of soda.—*Industrial Monthly.*

ADULTERATION OF COPAIBA WITH CASTOR OIL.

Several specimens of copaiba balsam adulterated with castor oil have within the past year, come under the notice of Prof. E. S. Wayne. The sophisticated article appeared to have a greater consistency than the genuine copaiba—a somewhat lighter color. To the taste and smell no great difference between it and the genuine could be observed; its superior density alone was what caused suspicion as to its purity, and led to an examination of it and the detection of the above-named adulterant. In the experiments made to detect the adulterant, it was found that petroleum benzine was a quick and perfect means of so doing. It was fouud that the pure copaiba was perfectly soluble to a clear solution in it, and that castor oil was not. It formed a milky mixture upon being shaken together, which quickly separated into a denser and lighter liquid, the lower containing all the oil. The suspected article was mixed in a test-tube with three times its volume of benzine, and shaken; a milky mixture was formed, which quickly separated into two portions

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—the upper containing in solution all the copaiba; the lower the castor oil. The latter, upon further examination, was found to be, as mentioned, castor oil. Hence, castor oil, as an adulterant of copaiba, is one of the most readily detected of the many substances that can be used for the purpose; and an article that will not freely and entirely dissolve in petroleum benzine must be rejected as impure. From further experiments with other substances, such as Venice turpentine, true and artificial and other fixed oils, the test unfortunately has no value.

Note: the amount of castor oil found was not the volume separated in the lower stratum, but about 50 per cent of that. As from experiment from a measured volume in a test-tube, the lower portion separated was double the volume of oil used, when the quantities used were those named in the experiment above.—*Cincinnati Lancet in Am. Jour. Pharm.*

SEPARATION OF THE MERCURY IN THERMOMETER TUBES.

When thermometers are overturned or shaken by accident it frequently happens that a portion of the mercury in the instrument is separated from the main column and hangs in the upper part of the tube. It is generally easy to unite this portion of the mercury with that in the bulb by holding the thermometer vertically two or three inches above a piece of card, and letting it fall vertically upon the card, or, while firmly holding it in the right hand, strike with the arm smartly against the palm of the left hand, or, further, the thermometer may be fastened to a piece of string and swung around, as with a sling, but with caution, and not too rapidly. In many cases the detached particle of mercury is so small that its weight is not sufficient to overcome the adhesion to the side of the glass tube; the following plan of procedure is then recommended;

The instrument is inclined at an angle of twenty to forty degrees, so that the bulb stands higher than the tube, and a blow with a flat piece of wood is given in the direction of the thermometer stem. The mercury in the stem is thus jerked forward, and, uniting with the detached portion, fills the entire tube. If the thermometer be now slowly and cautiously brought into such a position that the mercury begins to flow back toward the bulb, the united column may generally be returned to its proper place. In the place where the separation has occurred a small air bubble is generally found, but by following the above directions this difficulty may be almost always overcome.—*Jour. of App. Chem.*

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Editorial.

MEMBERS IN ARREARS.

It is well known that a notable proportion of the chemists and druggists of this Province have, either through inadvertence or design, neglected to remit to the Registrar their annual registration fee. A large number of these delinquencies relate to renewals, the first registration having been paid; but there are also a few instances in which parties have set at naught the authority of the Act, and paid no attention to the frequent reminders which they have from time to time received. For the credit of the pharmaceutical interests of Ontario, we are pleased to state that offenders of this class are quite exceptional, and that the large arrearages on the Registrar's books are almost altogether to be attributed to remissness, rather than to downright opposition to the law.

Acting on this supposition, the course pursued towards these delinquents has been one of forbearance, and although armed with adequate powers, the Council have, so far, refrained from any coercive measures. There is, however, a limit to the indulgence of the most lenient, and this point has now been reached. It is also evident that such a policy can no longer be pursued without laying the Council open to the charge of unfairness, and of neglecting the protection of those who comply with the law, and contribute to the support of a means whereby the law should be enforced.

Taking these considerations into account, a premonitory circular, giving notice that unless immediate payment of arrears is made, legal proceedings will be promptly instituted, has been sent to all delinquents. This has already been effectual in materially reducing the list, and we are inclined to think that, at the rate at which payments are now made, there will be no occasion to resort to extreme measures.

We cannot but say that it is to be regretted that even this circular should have been rendered necessary. Leaving monetary considerations altogether out of the question, it would have been vastly more satisfactory, and much more creditable to the cause to which we are espoused, if the trifling amount of the registration fee

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—in itself by no means commensurate with the advantages conferred—had been cheerfully paid. Other associations of a kindred character are supported purely out of love for the cause with which they are connected, and the liberal contributions which they receive give back no equivalent save the satisfaction conferred on the donors by the knowledge that they are helping on a worthy undertaking. With the Ontario society the case is very different. The Pharmacy Act extends its protection to all who comply with its regulations; the trade in a limited number of articles is altogether restricted to those registered; and the legitimate business of the pharmacist is, indirectly, assured to him. In addition to this, registration confers the right to deal in liquors for medicinal purposes—an advantage from which no inconsiderable revenue is derived. Again, every member of the College receives a copy of a periodical, the value of which it does not become us to define. Besides this, the College performs the functions of an examining board, and thus prevents unqualified persons from usurping a position which they might, otherwise, take with impunity. Lastly, and by no means least, there is the honor of belonging to an association which has for its aim the elevation of the class which it represents, and the advancement of the calling with which we are connected.

We trust that, for the future, these facts will receive the consideration to which they are entitled, and that the difficulties which have arisen have only been those attendant on a new undertaking, and, consequently will not recur.

UNQUALIFIED PARTNERS.

We have frequently been called upon to offer explanations respecting the registration of partners, and also to decide as to the legality or illegality of a partnership wherein only one of the parties might be qualified to conduct the business of a pharmaceutical chemist. We thought that both these points had been satisfactorily settled, but it would appear there is still some misapprehension in regard to the matter. For this uncertainty of opinion the provisional council, appointed at the organization of the College, is, in great part, chargeable. It will be remembered that, at the first meeting of this body, a resolution regarding the registration of partnerships was

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passed, became incorporated with the by-laws, and was thus extensively circulated. The tenor of this enactment was, that incompetent persons might connect themselves in partnership with those possessing the necessary qualifications, and, by payment of the usual fee, be entitled, for the time, to all the rights and privileges of pharmaceutical chemists. It was, of course, soon found out that, in passing such a by-law, the council had overstepped its powers; and an official notification to this effect was shortly afterwards received from the Attorney-General.

The nullification of this resolution leaves the law sufficiently explicit and devoid of complications; and as we have so often reviewed the several clauses of the Pharmacy Act which relate to this matter, we do not deem it necessary on this occasion to go into details, but merely state the substance of the existing regulations. This is, in brief: that each individual member of a firm (1) must be registered; (2) must show evidence of qualification, either by certificate or examination, before registration can be effected; (3) must pay the regular registration fee.

We have received a communication from Mr. Holloway, proprietor of the medicines bearing that name, complaining that certain parties composing the so-called New York Chemical Company, represent that they have a business connection with Mr. Holloway, while that gentleman avers that he has nothing whatever to do with such a firm, or any of the members composing it. These comprise Messrs. Mellis, Martin and Haydock, and our correspondent states that almost every mail from South America, the United States and Canada, brings accounts of the misrepresentations which these parties have made. In justice to Mr. Holloway we insert this notice to the trade.

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Editorial Summary.

Citrate of Iron and Quinine.—C. Murrey (*Pharm. Jour. & Trans.*) alludes to the early introduction of this salt into medical practice, and to its valuable character prior to its becoming official in the Pharmacopœia. In the absence of any authorized formula, manufacturers followed their own ideas in regard to the variety and proportion of the oxide of iron present, and analyses of samples of the commercial salts of the present day show anything but uniform results. It is not, however, to this already threadbare subject that the author desires to direct attention, but rather to certain inaccuracies in the characters of the salt as described in the *British Pharmacopœia*. In this authority it is stated that "fifty grains, dissolved in a fluid ounce of water, and treated with a small excess of ammonia, give a white precipitate which, when collected on a filter and dried, weighs eight grains. In order to test the correctness of this statement three points had to be determined: (1.) The amount of scaled salt that can be produced from a given quantity of sulphate of quinine. (2.) The percentage of anhydrous in ordinary commercial sulphate; and (3) whether the whole of the quinine added is removed as a precipitate by ammonia. In regard to the first point, the experience of the author proves that from one hundred parts of sulphate of quinine, four hundred and forty-five of scaled salt can be produced; if it were possible to work without the accidental loss of some scales, four hundred and fifty parts might be obtained, and this quantity is assumed as the proper product (including loss). In regard to the second point, it was found that commercial sulphate seldom represents the theoretical amount of alkaloid (73.31 per cent.) but contains, more generally, from 70 to 71 per cent. of anhydrous quinia. In order to determine the third point resort was had to experiment when it was found that ammonia failed to precipitate the whole of the quinia, 14.40 grains only being obtained instead of 15.54. "These facts show that instead of the iron and quinine salt containing an equivalent of 25 per cent. of sulphate of quinine, as is generally stated, it will really contain but the equivalent of 22.2 per cent., and that as commercial quinine contains, on the average, but 70 per cent. anhydrous quinine, the perfected scales will contain therefore 15.54 per cent. of quinine as a maximum, only a portion of which is removed as a precipitate by slight excess of ammonia. The accuracy of this deduction is corroberated by the analytical experiments previously detailed, by which 15.2 per cent. of quinine was separated from scales carefully made for experiment." The author suggests that the "characters

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and tests" given in the Pharmacopœia be modified thus: "100 grains dissolved in two fluid ounces of water and treated with a slight excess of ammonia give a white precipitate, which, when washed, collected on a filter and dried at 240°, weighs at least 14 grains (14·2). The filtrate if washed with chloroform (or ether) and decanted, evaporated to dryness, and dissolved in a small quantity of dilute sulphuric acid will give by ammonia a further precipitate, which, when dried, will weigh about one grain (·8 gr.)"

Benzoinated Lard.—The *Medical News* cites an instance of the use of Ung. Zinci oxid. prepared with lard benzoinated by being mixed with the tincture of benzoin, and by which an effect was produced the reverse of that contemplated, the application proving highly irritating instead of soothing. This result is attributed to the extra quantity of benzoin present in the lard, as prepared according to the New U. S. directions, in which formula the tincture is used instead of the resin. It seems probable that the supposition of our contemporay is correct, and if such is found to be the case the employment of the tincture should be abandoned, at least, for those preparations in which stimulating effect is not desirable. Since writing the above note the American *Journal of Pharmacy* for September has come to hand, and in it we notice a paper, by H. M. Wilder in which the same subject is alluded to. It was remarked by the author, that the greater portion of the resin separated on the evaporation of the alcohol, and that by remelting the ointment, the precipitate might be removed by straining; the resulting preparation being free from irritating properties. Taking advantage of this fact and applying it to the official directions, the formula might be modified so as to read "and, when the alcohol has entirely evaporated, strain, and stir occasionally while cooling.

Administration of Phosphorus.—Considerable attention is, at present, being directed to the employment of phosphorus for the relief of neuralgic affections. Various old methods for the solution of the phosphorus have been revived, and some new methods have been proposed. A late issue of this journal contained a number of these formulæ, and we have now to make an addition of a preparation recommended by Dr. J. A. Thompson, (*Practitioner*). One grain of phosphorus is dissolved in 3 drachms of absolute alcohol. This is termed the tincture of phosphorus, and the preparation may be depended on as retaining its power for, at least, six weeks. For administration, a good form is, Tincture of phosphorus, three drachms; rectified spirit, two drachms; essence of peppermint, half a drachm;

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water to six ounces. This may be divided into twelve doses, one of which may be taken every four hours. The stability of the latter mixture cannot be depended on for longer than one day.

Erasmus Wilson's Lotion for the Hair.—Mr. Greenish contributes to the *Pharm. Jour. & Trans.* the following recipe which was originally obtained from Mr. Wilson:

Liq. ammon. fort.....	one ounce.
Ol. amygd. dulc.....	one ounce.
Aq. mellis	two ounces.
Sp. rosmarini	four ounces.

This prescription has sometimes been presented in Canada, and in default of *Aqua mellis*—a compound about which a great deal of uncertainty exists—we have substituted Cologne water, as representing as nearly as possible the ancient preparation indicated. The *Sp. rosmarini* is made in the proportion of two drachms of oil of rosemary to one gallon of rectified spirit.

Adulteration of Lycopodium.—B. Lillard, (*Pharmacist and Chemical Record*) points out an adulteration of lycopodium with dextrin. It was found that a mixture of equal parts, if slightly colored, possesses the general characteristics of the pure article, and would ordinarily pass unnoticed, except that if exposed in a damp place, it is apt to attract moisture, and adhere loosely. Dextrin, even when mixed in small proportions, is very easily detected, by rubbing in a mortar, with a little water, when its peculiar odor is at once developed and recognized. The author has since examined a number of samples, from different places, but has been unable to detect any dextrin in any of them.

New Tests for Fuchsine in Syrups, &c.—A delicate test showing one ten-thousandth part of one per cent of magenta is that of treating the article to be tested with subacetate of lead, filtering, and shaking with purified fusel oil. The fuchsine, if present, gives a characteristic color to this liquid. Another method is that proposed by Puscher in which a woolen or silken thread is put into the suspected liquid. The coloration by fruit juice can readily be removed by water, while that from fuchsine is permanent.

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Etherial Tincture of Iodoform.—In a paper by MM. Odin & Leymarie, (*Repert de Pharm. in Druggists' Circular.*) the following conclusions in regard to the tincture of iodoform are arrived at, (1) that the iodoform should be in crystals ; (2) to make the solution, by agitation, in a *red* glass flask; (3) to use the following proportions, by weight: iodoform, one part; ether (60 Baume) four parts.

To keep away Flies.—A correspondent of the *Druggist's Circular* proposes a simple means for keeping flies from the slab of the soda water fountain. This is effected by washing the slab with a solution of sal soda, and it is stated that so long as the surface is covered by the alkaline salt no trouble will be experienced.

Disguising the taste of Tinct. Ferri Perchlor.—Dr. Snow, (*British Medical Journal*) recommends the addition of glycerine to mixtures containing tincture of perchloride of iron, as disguising, altogether, the disagreeable, metallic, astringent taste of the medicine. The proportion to be used is half an ounce to an ordinary eight ounce mixture. It is said that glycerine answers this purpose much better than the syrups, or spirit of chloroform, ordinarily used.

Adhesive Plaster.—It is said that adhesive plaster, rendered brittle by age, may be restored by brushing over the surface a little oil of turpentine, and leaving it to dry for a day. It appears probable that this treatment would render the plaster more stimulating than it should be, as traces of the turpentine would remain for some time.

Absence of the Cinchona Alkaloids in Eucalyptus Globulus.—Mr. Broughton, Quinologist connected with the Indian government, having examined the bark and leaves of *eucalyptus globulus*, concludes that neither quinine, quinidine, cinchonine, or cinchonidine is contained in the plant, in any proportion.

Paper Wick for Spirit Lamps.—It is stated that a piece of filtering or blotting paper, tightly rolled together, makes a good wick for spirit lamps requiring a wick. By rolling the paper around a cylinder, a wick suitable for burners of that form might be produced.

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Answers to Correspondents.

DRUGGIST, *Prescott*—TANNATE OF BISMUTH.—This salt is best prepared from the crystallized nitrate, made by dissolving metallic bismuth, or its carbonate, in dilute nitric acid, evaporating and crystallizing. Forty-four parts of this crystallized product are dissolved in water and treated with a solution of caustic soda, in excess; oxide of bismuth is precipitated; this must be well washed, collected on a filter, removed to a mortar, and triturated with twenty-nine parts of tannic acid. The magma should now be diluted with water, washed, and collected on a filter. The product, when dry, will be of a yellow color, and nearly tasteless.

A. J. JOHNSTON, *Peterborough*.—We have communicated the substance of your letter to the business editor of the JOURNAL, and asked him to send you the missing numbers, which, we trust, you have, ere this, received. As for your complaint that some members who, having passed examination, are kept for months without their certificates, we have nothing to say, but only to hope that these matters will in future be more carefully attended to. We are always pleased to receive any communication from our readers, and try to do all in our power to serve them; but, at the same time it would be well for correspondents to remember that the Registrarship of the College, the business management of the JOURNAL, and the editing thereof, are each conducted by separate persons. Complaints should, therefore, be sent to the proper persons, so that the blame be laid upon the right shoulders, and the remedy be more promptly applied.

FAIR PLAY.—You labor under a misapprehension as to the scope of the Pharmacy Act. If you will take the trouble to look over the Act, (see first pages of the "Sale of Poisons' Book,") you will find that the term "poison" is not to be interpreted as meaning any substance of a poisonous nature; but when mentioned in the Act is restricted in meaning to certain drugs which are enumerated in a schedule. You complain of country storekeepers, engaged in a general trade, selling such articles as senna, salts, castor oil, and camphor. They have a legal right to do so, and it would be an impossible piece of legislation to attempt to deprive them of this right. Our law makers would not for a moment entertain the idea of legalizing a monopoly of the sale of drugs, except so far as the safety of the public is concerned. This is the only consideration which, in the passing of the Act, had a favorable influence, and we think, if you give the matter a little thought, you will admit that it would be as unfair to restrict to druggists, exclusively, the sale of harmless drugs, as to permit none but brushmakers to sell hair brushes; or grocers to sell spices.

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Practical Formulæ

Pills of Protoxide of Iron.—M. Kirchmann (*Archiv. der Pharm.*) prepares pills of protoxide of iron by mixing an equivalent of calcined magnesia with one of crystallized protosulphate of iron, and adding a small quantity of concentrated glycerine. For sixty pills he employs—

Crystallized ferrous sulphate	120 grams.
Calcined magnesia	20 "
Glycerine	15 drops.

These pills have a good consistence, and can be covered with sugar. If they be placed in water the sulphate of magnesia is dissolved, and the oxide of iron deposited.—*Pharm. Jour.*

Turpentine Pills.—M. Lachambré (*Journ. des Connaissances Médicales*), gives the following formula for preparing turpentine pills, which he says are promptly digested without fatiguing the stomach or causing disagreeable eructations :—

Oil of turpentine	8 grams.
White wax	20 "
Essence of lemon	2 drops.
Powdered sugar	9 grams.

Melt the wax in the turpentine and essence of lemon, pour into a mortar, and when cool add the sugar and form a mass. Divide into pills of twenty-five centigrams each, which should be covered with starch and kept in well-stoppered bottles. Each pill will contain five centigrams of turpentine.—*Ibid.*

Rubber Cement.—As rubber plates and rings are now-a-days used almost exclusively for making connections between steam and other pipes and apparatus, much annoyance is often experienced by the impossibility or imperfection of an air-tight connection. This is obviated entirely by employing a cement which fastens alike well to the rubber and to the metal or wood. Such a cement is prepared by a solution of shellac in ammonia. This is best made by soaking pulverized gum shellac in ten times its weight of strong ammonia, when a slimy mass is obtained, which in three or four weeks will become liquid without the use of hot water. This softens the rubber and becomes, after volatilization of the ammonia, hard and impregnable to gases and fluids.—*Jour. of App. Chem.*

A Strong Adhesive Paste.—According to Fr. Sieburger, an excellent paste may be prepared as follows: Four parts, by weight, of glue are soaked for several hours in 15 parts of water, and then slowly warmed until a perfectly clear solution is formed. This

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solution is then diluted with 65 parts boiling water and thoroughly stirred. In the meantime, 30 parts of starch are stirred into 200 parts of cold water, so as to form a thin, milky liquid, free from lumps. Into this is poured the solution of glue, stirring continually and heating. When cold, 10 drops of carbolic acid are added. The paste made in this way is said to possess extraordinary adhesive power, joining leather, paper, pasteboard, &c. By keeping it in closed vessels, so that the water cannot evaporate, it may be preserved for years.—*Jour. of App. Chem.*

Liquor Picis Alkalinus.—The following preparation is that of the late Dr. H. D. Bulkley, of New York, who proposed it to fill the place of a secret French preparation of tar:—

R.	Picis liquidæ,	ʒij.;
	Potassæ causticæ,	ʒj.;
	Aquæ,	ʒv. m. ft. sol.

This mixes with water in all proportions, and discolors the skin to a very moderate extent. It dries rapidly and leaves very little stickiness. He has used it in all degrees of strength, and regards it as one of the best methods of employing tar. The potash heightens the anti-pruritic effect of the tar. The solution he has employed with advantage in eczema, both in its chronic stage with thickenings, and in the more acute forms, where exudation has about or nearly ceased and the itching is intense. In chronic cases with infiltration, it may be used in full strength. Good success has followed its use in lupus erythematosus and psoriasis.—*Phila. Med. & Surg. Reporter.*

Balsam of Mecca (Balm of Gilead)—(Factitious).—The article sold under this name is generally composed of the following:

Take of Gum Benzoin, 2 parts.
Storax liquid, 1½ parts.
Balsam of Tolu, 1 part.
Balsam of Fir, 12 parts.

Place them in a glass flask or bottle, and subject to the heat of a water bath for several hours until liquified, allow to cool and decant the clear portion; to which add sufficient quantity of the oils of lemon, cassia, rosemary, nutmeg and vanilla, to give it a strong aromatic odor. Another formula is the following:

Take of Gum Benzoin, 4 parts.
Balsam of Fir, 16 parts.

Mix and heat, when the gum benzoin is dissolved in the balsam, strain through cloth, and when cold add the oil of lemon, rosemary and cassia—of each two drachms.—*Pharmacist.*

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Varieties.

NEW MODE OF ADMINISTERING COD-LIVER OIL.—Numerous attempts have been made to render cod-liver oil less disagreeable, either by gelatinising or solidifying it, but only with partial success. The system of capsules seems to answer best ; but the great objection is the number of these which must be swallowed. Now it would seem that Messrs. Carre and Lemoine have contrived to incorporate the oil with *bread*. Each pound of bread contains a little more than two ounces of the oil or five tablespoonfuls, and three ounces of milk. Small loaves are also made which contain only two tablespoonfuls, and which altogether weigh only five ounces. These loaves are beautifully white, look extremely well, and have hardly any taste. Both children and adults eat them very willingly. In M. Bouchut's ward, at the Children's Hospital in Paris, 34 small loaves are brought every morning, and are looked forward to with much anxiety by the children for breakfast. They have been largely used among private patients, and no one complains of any disagreeable tasts. Five or six tablespoonfuls of oil may thus be given per diem, incorporated with the bread taken with the usual food.—*Canadian Medical Times.*

IMITATION OF MARBLE.—Imitations of marble are in great demand for ornamentation, and many different compounds are used for the purpose. M. Pichler, a gilder in Vienna, from his own experience, recommends the following composition as being simple and satisfactory: Into one pound of best joiner's glue, boiled rather thick, half a pound of rosin (colophony) is to be slowly stirred. (Instead of the rosin, the same quantity of Venetian turpentine may be used.) Into this plastic mass is worked a mixture of powdered chalk and of any mineral color of the desired shade, and, after the addition of a little olive oil, it is ready for moulding. It is sometimes convenient to have the material in the shape of thin sheets, to be cut as required ; and, in this case, the mass is rolled out upon a slightly-heated plate. M. Pichler asserts that this composition hardens rapidly, and can be easily polished. When kept for a length of time, it should be wrapped in a moist sheet, and exposed to a gentle heat before using. The variegated marble-like veins can also be produced by kneading together differently-colored portions of this mass.—*Boston Journal of Chemistry.*

A NEW SUBSTITUTE FOR QUINIA.—Among the specimens of drugs exhibited in the International Exhibition in Vienna is the *Echisess scholaris*, a plant of the natural order *Apocyneæ*. It is especially abundant at Luzon, in the province of Batangar, in the Philippine Islands ; and its bark has long been used by the natives, under the name of *dita*, as a remedy in all kinds of fever. Herr Gruppe, an apothecary in Manilla, has found in it an uncrytallizable very hygroscopic bitter substance, to which he has given the name of *ditain*. The principal Spanish physician in Manilla, Dr. Miguel Zina, has given it to numerous hospital patients under his care, and has found that ditain is not only a perfect substitute for quinia, but also that its use is not followed by the disagreeable results which often attend the use of quinia. It is given in the same doses and in the same way as quinia. In many cases, also, its activity as a tonic was well marked. The ditain is prepared from the bark in the same way as quinia from cinchona: 100 *grammes* of ditain, 0.85 *gramme* of sulphate of lime, and 10 *grammes* of a

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perfectly inactive matter. A single tree yields a large quantity of bark without injuring its growth. It is calculated that the price of ditain in Europe would be about 160 *frances* per kilo (3s. 6d. to 4s. per ounce).—*Brit. Med. Jour.*

ESTIMATION OF ALCOHOL IN FUSEL OIL.—Dr. G. L. Ulex, of Hamburg, recommends to distil from 100 c. c. of the suspected fusel oil 5 c. c., and to agitate the distillate with an equal volume of saturated solution of table salt. If, on standing, one-half or more is separated as an oily liquid, it is a reliable proof that the fusel oil contained less than 15 per cent. of proof spirit. If, however, a smaller quantity or no fusel oil is separated, an addition of proof spirit has taken place. A given quantity of fusel oil is then agitated with an equal volume of saturated solution of table salt, in which propylic and butylic alcohols are far less soluble than in water. After complete separation the salt solution is distilled, to recover the alcohol and estimate its amount.—*Pharmac. Zeitung*, 1873, No. 48. in *Am. Jour. Pharm.*

VEGETABLE GLUE.—This name is applied to a mucilage of gum arabic the adhesive properties of which have been considerably increased by adding to 250 grams (made of 2 parts of gum to 5 of water) 2 grams of crystallized sulphate of aluminum, previously dissolved in 20 grams of water. Alum has a similar effect, but in a less satisfactory degree.—*Pharm. Cent. Halle*, 1873, No. 24. in *Am. Jour. Pharm.*

Bocke has announced that chloroform is an excellent solvent from which to crystallize quinine in beautiful, needle-like crystals.

Registrar's Notices.

LIST OF CHEMISTS WHO HAVE RENEWED THEIR REGISTRATION DURING THE PAST MONTH.

Barker, W. T., Trenton.
Blume, M., Toronto.
Brodie, W. F., Forest.
Buck, A. C., Caledonia.
Clemesha, J., Bailieboro'.
Colcleugh, Jas., Mount Forest.
Doan, D. W., Aurora.
Eastman, T. F., Arkona.
Elwell, G. T. O., Ottawa.
Fraleigh, S., St. Mary's.
Gray, H. R., Montreal.
Harvard, A., Toronto.
Jackson, G. E. Egmondville.
Johnson, W. J., Farmersville.
Lushington, Jas. L., Amherstburg.
Lyman, B. H., Toronto.
Mason, C. S., Brantford.
McKenny, Thos., Thornbury.
Rock, Thos., Hamilton.
Steward, W. R., Toronto.
Striker, G., Picton.
Taylor, R. N., Hamilton.
Watson, T. T., Barrie.
Wilson, J., Simcoe.
Woods, J., Barrie.
Woolhouse, J. B., Lindsay.

NEW REGISTRATIONS.

Beauchamp, P., Toronto.
Johnson, Jas, Morven.
Richards, J. E., Aylmer.
McGinnes, W. R., Arnprior.

ASSOCIATE.

Bogart, P., Campbellford.

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DRUGS, MEDICINES, &c.	$ c.	$ c.
Acid, Acetic, fort	0 14 @	0 15
Benzoic, pure	0 23	0 30
Citric	1 50	1 60
Muriatic	0 05	0 06
Nitric	0 11½	0 15
Oxalic	0 27	0 30
Sulphuric	0 03½	0 07
Tartaric, pulv	0 50	0 50
Ammon, carb. casks	0 23	0 24
" jars	0 23	0 24
Liquor, 880	0 25	0 28
Muriate	0 14	0 15
Nitrate	0 45	0 60
Æther, Acetic	0 45	0 50
Nitrous	0 35	0 37
Sulphuric	0 50	0 50
Antim. Crude, pulv	0 13	0 17
Tart "	0 65	0 70
Alcohol, 95 per ct.....Cash	1 60	1 72
Arrowroot, Jamaica	0 16	0 22
Bermuda	0 50	0 65
Alum	0 02½	0 03½
Balsam, Canada	0 50	0 50
Copaiba	0 85	0 90
Peru	3 80	4 00
Tolu	0 90	1 00
Bark, Bayberry, pulv	0 20	0 22
Canella	0 17	0 20
Peruvian, yel. pulv	0 42	0 50
" red "	2 10	2 20
Slippery Elm, g. b	0 15	0 20
" flour, packets	0 28	0 32
Sassafras	0 15	0 20
Berries, Cubebs, ground	0 20	0 25
Juniper	0 06	0 10
Beans, Tonquin	0 62	1 10
Vanilla	28 00	28 00
Bismuth, Alb	3 40	4 00
Carb.	3 65	4 00
Camphor, Crude	0 38	0 40
Refined	0 45	0 50
Cantharides	2 80	3 00
Powdered	2 85	3 10
Charcoal, Animal	0 04	0 06
Wood, powdered	0 10	0 15
Chiretta	0 20	0 30
Chloroform	1 10	1 65
Cochineal, S. G	0 80	0 95
Black	1 10	1 20
Colocynth, pulv.	0 50	0 60
Collodion	0 90	1 00
Elaterium.....oz	5 80	5 90
Ergot	0 50	0 60
Extract Belladonna	2 00	2 25
Colocynth, Co	1 25	1 75
Gentian	0 50	0 60
Hemlock, Ang	0 85	0 95
Henbane, "	2 10	2 40
Jalap	5 00	5 50
Mandrake	1 75	2 00
Nux Vomic.....oz	0 40	0 50
Opium.....oz	1 50	
Rhubarb	5 00	5 50
Sarsap. Hon. Co	1 00	1 20
" Jam. Co	4 00	4 50
Taraxacum, Ang	0 70	0 80
Flowers, Arnica	0 17	0 25
Chamomile	0 32	0 40
Gum, Aloes, Barb. extra	0 70	0 80
" " good	0 40	0 50
" Cape	0 16	0 20
" " powdered	0 20	0 30
Socot	1 05	1 35
" " pulv	1 00	0 00
Arabic, White	0 70	0 75
" powdered	0 60	0 75
" sorts	0 28	0 30
" " powdered	0 42	0 50
" com. Gedda	0 13	0 16
Assafœtida	0 35	0 42
British or Dextrine	0 13	0 15
Benzoin	0 35	0 75
Catechu	0 12	0 15
" powdered	0 25	0 30
Euphorb, pulv	0 35	0 40
Gamboge	1 40	1 50
Guaiacum	0 90	1 00
Myrrh	0 50	0 70

DRUGS, MEDICINES, &c.—*Contd.*	$ c.	$ c.
Sang Dracon	0 60	0 70
Scammony, powdered	6 00	6 50
" Virg. "	14 50	—
Shellac, Orange	0 65	0 70
Gum, Shellac, liver	0 60	0 65
Storax	0 40	0 45
Tragacanth, flake	1 10	1 40
" common	0 53	0 65
Galls	0 28	0 32
Gelatine, Cox's 6d	1 15	1 20
Glycerine, common	0 25	0 30
" Vienna	0 25	0 30
Prices	0 60	0 75
Honey, Canada, best	0 15	0 17
Lower Canada	0 14	0 16
Iron, Carb. Precip	0 20	0 25
" Sacchar	0 40	0 55
Citrate Ammon	1 50	1 50
" & Quinine, oz	0 53	0 58
" & Strychine	0 17	0 25
Sulphate, pure	0 08	0 10
Iodine, goed	10 00	10 50
Resublimed	10 75	11 00
Jalapin	1 25	1 50
Kreosote	2 40	2 50
Leaves, Buchu	0 22	0 30
Foxglove	0 25	0 30
Henbane	0 35	0 40
Senna, Alex	0 27	0 60
" E. I.	0 14	0 20
" Tinnevilly	0 20	0 30
Uva Ursi	0 15	0 17
Lime, Carbolate.....brl	5 50	—
Chloride	0 06	0 07
Sulphate	0 08	0 12½
Lead, Acetate	0 14	0 15
Leptandrin.....oz.	0 60	—
Liq. Bismuth	0 50	0 75
Lye, Concentrated	1 75	2 00
Liquorice, Solazzi	0 50	0 55
Cassano	0 23	0 40
Other brands	0 14	0 25
Liquorice, Refined	0 35	0 45
Magnesia, Carb. 1 oz.	0 20	0 25
" 4 oz.	0 17	0 20
Calcined	0 65	0 75
Citrate.....gran.	0 63	0 75
Mercury	1 50	1 60
Bichlor	1 30	1 40
Chloride	1 45	1 55
C. Chalk	0 65	—
Nit. Oxyd	1 60	1 70
Morphia Acet	4 45	4 60
Mur.	4 45	4 60
Sulph	4 60	4 75
Musk, pure grain.....oz	23 00	—
Canton	0 90	1 20
Oil, Amonds, sweet	0 42	0 50
" bitter	14 00	15 00
Aniseed	4 00	4 25
Bergamot, super	6 25	6 50
Caraway	3 20	3 50
Cassia	2 80	2 90
Castor, E. I	0 14	0 15
Crystal	0 22	0 25
Italian	0 26	0 28
Citronella	1 25	1 35
Cloves, Ang	2 20	2 40
Cod Liver	1 5	1 50
Croton	1 75	2 00
Juniper Wood	0 80	1 00
Berries	6 00	7 00
Lavand, Ang.....oz.	0 90	1 00
Exotic	1 40	1 60
Lemon, super	5 00	5 50
ord	3 20	3 40
Orange	4 00	4 25
Origanum	0 65	0 75
Peppermint Ang	13 00	14 40
" Amer.	3 80	4 00
Rose, Virgin	8 50	8 75
" good	6 80	7 00
Sassafras	0 90	1 00
Wintergreen	6 00	6 50
Wormwood, pure	4 00	6 50
Ointment, blue	0 90	1 00
Opium, Turkey	8 50	8 75
pulv	10 50	10 75

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DRUGS, MEDICINES, &c.—*Cont'd*	$ c.	$ c
Orange Peel, opt.	0 30	0 36
" good	0 12½	0 20
Pill, Blue, Mass.	1 00	1 00
Potash, Bi.chrom	0 23	0 27
Bi-tart	0 33	0 35
Carbonate	0 14	0 20
Chlorate	0 55	0 60
Nitrate	10 50	11 00
Potassium, Bromide	11 5	1 40
Cyanide	0 75	0 80
Iodide	7 75	8 00
Sulphuret	0 25	0 35
Pepsin, Boudault's oz	1 40	—
Houghton's doz.	8 00	9 00
Morson's oz.	0 85	1 10
Phosphorus	0 95	1 00
Podophyllin	0 50	0 60
Quinine, Pelletier's	—	2 45
Howard's	2 50	—
" 100 oz. case.	2 45	—
" 25 oz. tin.	2 45	—
Root, Colombo	0 13	0 20
Curcuma, grd	0 12½	0 17
Dandelion	0 17	0 20
Elecampane	0 16	0 17
Gentian	0 08	0 10
" pulv	0 15	0 20
Hellebore, pulv	0 17	0 20
Ipecac, "	1 50	1 60
Jalap, Vera Cruz	1 00	1 25
" Tampico	0 70	1 00
Liquorice, select	0 12	0 13
" powdered	0 15	0 20
Mandrake "	0 20	0 25
Orris, "	0 20	0 25
Rhubarb, Turkey	2 50	2 75
" E. I.	1 10	1 20
" " pulv	1 20	1 30
" " 2nd	0 90	1 00
" French	0 75	—
Sarsap., Hond	0 40	0 45
" Jam	0 88	0 90
Squills	0 10	0 15½
Senega	0 90	0 95
Spigelia	0 25	0 30
Sal., Epsom	2 25	3 00
Rochelle	0 32	0 35
Soda	0 02½	0 03
Seed, Anise	0 13	0 16
Canary	0 05	0 06
Cardamon	2 25	2 50
Fenugreek, g'd	0 09	0 10
Hemp	0 06½	—
Mustard, white	0 14	0 16
Saffron, American	1 15	1 50
Spanish	12 00	13 00
Santonine	8 25	9 00
Sago	0 08	0 09
Silver, Nitrate Cash	14 85	16 50
Soap Castile, mottled	0 11	0 14
Soda Ash	0 04	0 05
Bicarb. Newcastle	—	6 50
" Howard's	0 14	0 16
Caustic	0 06½	0 06½
Spirits Ammon., arom	0 35	0 35
Strychnine, Crystals	2 60	2 70
Sulphur. Precip	0 10	0 12½
Sublimed	0 03½	0 05
Roll	0 03	0 04½
Vinegar, Wine, pure	0 55	0 60
Verdigris	0 35	0 40
Wax, White, pure	0 75	0 80
Zinc. Chloride oz	0 10	0 15
Sulphate, pure	0 10	0 15
" common	0 06	0 10
DYESTUFFS.		
Annatto	0 35 @	0 60
Aniline, Magenta, cryst	2 50	2 80
liquid	2 00	—
Argols, ground	0 15	0 25
Blue Vitrol, pure	0 10	0 10
Camwood	0 06	0 09
Copperas, Green	0 01½	0 02½
Cudbear	0 16	0 25
Fustic, Cuban	0 02½	0 04
Indigo, Bengal	2 40	2 50
Madras	0 90	0 95
Extract	0 30	0 35

DYESTUFFS—*Continued.*		
Japonica	0 07½	0 07½
Lacdye, powdered	0 33	0 38
Logwood	0 02	0 03
Logwood, Camp	0 02	0 3½
Extract	0 10	0 14
" 1 lb. bxs	0 13	—
" ½ lb. "	0 14	—
Madder, best Dutch	0 14	0 15
2nd quality	0 12	0 14
Quercitron	0 03	0 05
Sumac	0 06	0 08
Tin, Muriate	0 10½	0 12½
Redwood	0 05	0 06
SPICES.		
Allspice	0 11½@	0 12
Cassia	0 39	0 40
Cloves	0 30	0 32
Cayenne	0 30	0 35
Ginger, E. I.	0 16	0 17
Jam	0 20	0 30
Mace	1 75	1 75
Mustard, com	0 20	0 25
Nutmegs	1 15	1 20
Pepper, Black	0 22½	0 23
White	0 48	0 50
PAINTS, DRY.		
Black, Lamp, com	0 07 @	0 08
" refined	0 25	0 30
Blue, Celestial	0 08	0 12
Prussian	0 65	0 75
Brown, Vandyke	0 10	0 12½
Chalk, White	0 01	0 01½
Green, Brunswick	0 07	0 10
Chrome	0 16	0 25
Paris	0 30	0 35
Magnesia	0 20	0 25
Litharge	0 07	0 09
Pink, Rose	0 12½	0 15
Red Lead	0 07½	0 08
Venetian	0 02½	0 03½
Sienna, B. & G	0 07	0 08
Umber	0 07	0 10
Vermillion, English	1 50	1 60
American	0 25	0 35
Whiting	0 85	0 90
White Lead, dry, gen	0 08½	0 09
" " No. 1	0 07	0 08
" " No. 2	0 05	0 07
Yellow Chrome	0 12½	0 35
" Ochre	0 02½	0 03½
Zinc White, Star	0 10	0 12
COLORS, IN OIL.		
Blue Paint	0 12 @	0 15
Fire Proof Paint	0 06	0 08
Green, Paris	0 30	0 37½
Red, Venetian	0 07	0 10
Patent Dryers, 1 lb tins	0 11	0 12
Putty	0 03¾	0 04½
Yellow Ochre	0 08	0 12
White Lead, gen. 25 lb. tins	2 50	—
" No. 1	2 25	—
" No. 2	2 00	—
" No. 3	1 75	—
" com	1 30	—
White Zinc, Snow	2 75	3 25
NAVAL STORES.		
Black Pitch	5 00 @	5 25
Rosin, Strained	4 50	—
Clear, pale	7 80	—
Spirits Turpentine	0 58	0 60
Tar Wood	5 50	5 75
OILS.		
Cod	0 63 @	0 65
Lard, extra	0 90	—
No. 1	0 80	0 85
No. 2	0 75	0 90
Linseed, Raw	0 76	0 80
Boiled	0 81	0 85
Olive, Common	1 10	1 20
Salad	1 80	2 30
" Pints, cases	4 20	4 40
" Quarts	3 25	3 50
Seal Oil, Pale	0 75	0 80
Straw	0 68	0 75
Sesame Salad	1 30	1 35
Sperm, genuine	2 20	2 40
Whale refined	0 90	0 95

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CANADIAN

PHARMACEUTICAL JOURNAL

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Original and Selected Papers.

EFFERVESCING SOLUTION OF TARTRATE OF SODIUM.*

BY ADOLPH W. MILLER, M.D., PH.D.

This preparation is offered as an improvement on the popular solution of citrate of magnesium. The formula for its manufacture was devised by Mr. Joseph Landschutz, a veteran pharmacist of this city, who has been for some time dispensing it, and who states that his customers express a decided preference for it.

The U. S. Dispensatory says of tartrate of sodium, that it is recommended by M. Delioux as an agreeable purgative, almost without taste, and equal to sulphate of magnesium in its medicinal effects. The merits claimed for the solution of tartrate of sodium are, that it is more pleasant to the taste than even citrate of magnesium, while it is more reliable and efficient in its action as a purgative, with less tendency to produce tenesmus. Another decided advantage is the fact of its forming a permanent solution, from which no precipitate settles down, and last, though not least, its much greater cheapness, costing only about one-fourth as much

* From the American Journal of Pharmacy.

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as the magnesium citrate. The present high price of citric acid seems to offer peculiar temptations to cheaper sophistications, such as sulphate of magnesium, as pointed out by Mr. Wm. R. Warner in his essay on page 397, vol. 39 (1867), of this journal. The retail price of 25 cents per bottle, which has been adopted in many pharmacies, of this city, in reality yields an entirely inadequate profit to the vender, while competition in many localities makes it difficult to obtain a higher rate. It would therefore seem to be in the interest of both druggists and physicians to make a trial of the new aperient under consideration, which promises to eclipse the now renowned citrate of magnesium.

Mr. Landschutz's formula for filling 14 of the ordinary 12-ounce citrate bottles is as follows:—

Dissolve 9 oz. crystallized tartaric acid, and 17 oz. crystallized carbonate of sodium, in about one quart of cold water.

Provided the acid is not moist, and the carbonate not effloresced, the above solution will be nearly neutral. In general, it is best to test it, and to neutralize it if necessary. Then dissolve it in 28 scruples bicarbonate of sodium. Filter, and add sufficient water to make the entire quantity measure 147 fluid ounces.

Make a syrup from

21 oz. best crushed sugar,

14 drachms crystallized tartaric acid,

10 oz. water. After cooling, add

1 drachm spirits of lemon, and mix thoroughly.

Measure 1½ fluid ounces of this syrup into each of the 14 bottles. Then pour in slowly the first solution, carefully avoiding an admixture with the syrup; cork and tie each bottle as soon as filled. When this is carefully managed, but very little carbonic acid will escape.

Each bottle so prepared will contain about seven drachms of dry tartrate of sodium, which is a fair adult dose.

At present market rates the above ingredients will cost about five cents for the contents of each bottle, yielding a handsome and remunerative profit. The price, in fact is so low that it leaves no incentive towards substitutions or alteration of the formula.

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THE USE OF NUT OIL IN PHARMACY, AND ESPECIALLY IN THE PREPARATION OF UNGUENTUM HYDRARGYRI NITRATIS.*

BY M. FALIERES.

In a brief review of former formulæ for the preparation of citrine ointment, the author calls attention to the large increase which has taken place in the relative proportion of the nitric acid to the mercury. The proportions indicated by Baume, in 1785, were nitric acid 128 parts, mercury 96 parts, lard 1000 parts. The mercury has been gradually increased until, in the Codex for 1866, where equal parts (500) of olive oil and lard are ordered, the nitric acid is 100 parts, and the mercury 50. Thus the proportions which originally were 4 of nitric acid (sp. gr. 1·28) and mercury 3, have become nitric acid (sp. gr. 1·42) 2, and mercury 1.† Without blaming the progressive diminution of the metal, since even with this reduction the medicament still remains very powerful, the author objects to the great excess of acid. Suggestions have been made to remove the excess of acid by washing the ointment with a large quantity of water, and then adding an equal weight of almond oil, but have been rejected in consequence of the length and difficulty of the operation, and it being far from certain that the whole of the acid excess would be thus removed.

The author having had occasion to make a comparative investigation of pure olive oil and the oil of the ground nut (*Arachis hypogœa*), found that the arachis oil possesses a great apititude for the nitric solidification. Hence he conceived the idea of suppressing entirely the lard in the preparation of nitrate of mercury ointment. The product so obtained seemed to present such marked advantages as to induce him to make known the process:

Mercury	5 parts.
Nitric Acid (sp. gr. 1·42)	10 "
Nut Oil	100 "

Dissolve without heat the mercury in the acid; pour the mercurial solution into the oil, agitating from time to time with a glass or earthenware spatula. After two or three hours, according to the quantity operated upon, and at a temperature of about 20° C., the mixture begins to take a milky consistence, which lasts for about an hour, then thickens to that of a soft butter. This latter stage lasts

* "Bull. des Travaux de la Societe de Pharmacie de Bordeaux," vol. xiii. 165. Reproduced in Pharm. Journ. & Trans.

† In the B. P., where more olive oil is used, the proportions are, nitric acid 3, mercury 1.

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at least two hours, during any portion of which time the ointment may be poured out. The mass spread with perfect regularity in a paper mould; the thickness of the layer is uniform, and there is no separation between the oily and mercurial elements, showing that the combination is complete. The product does not set so rapidly as the official one; at the end of ten or twelve hours it is easily divided by a wooden knife, but this is more conveniently done after it has stood for twenty-four hours; its consistence is then similar to that of cacoa butter in the summer. Two or three days afterwards it appears to attain its maximum of firmness, and some has been kept upwards of two months without showing any appreciable difference in its consistence. Compared with the Codex preparation, the author considers that the ointment made with nut oil has greater cohesion, is not friable, and appears much better adapted for friction, as it melts and spreads upon the skin with greater facility.

M. Falieres is of opinion that no serious exception could be taken to the change of fat excipient which he proposes. The progress attained in the manufacture of arachis oil has provided a white, bland, tasteless article, which is, commercially speaking, neutral. Perfumers, who are not, like pharmacists, bound by a formal code, make large use of the ground nut oil in the manufacture of pomades, cold cream, etc. A perfect type of a non-drying oil, it absorbs relatively small quantities of perfume; it requires the least wax, spermaceti, or stearine for its solidification, and finally may be kept almost indefinitely without turning rancid. The author promises at some future time to show in detail the advantages that may be obtained from the use of nut oil in a large number of pharmaceutical preparations.

URINARY EXAMINATIONS IN GENERAL, AND THE TESTS FOR ALBUMEN AND SUGAR IN PARTICULAR.*

BY LOUIS SIEBOLD.

As pharmacists are now fast advancing from the position of mere traders to the rank of scientific men, the testing of urine will be more frequently entrusted to them by the medical practitioners, who themselves—as a rule—have not the necessary practical experience for conducting such examinations. Pharmacists, I think, cannot be too strongly recommended to devote some of their time

* Read before the British Pharmaceutical Conference, and published in the Pharmaceutical Journal & Transactions, Sept. 27th, 1873.

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and energy to the acquisition of an intimate knowledge of urinary analysis, especially as we find that our professional analysts in general are but imperfectly acquainted with this branch of analytical chemistry. In bringing this subject before you, gentlemen, I shall, of course, not attempt to treat it in its entirety, for this would be impossible to do, even in a very superficial manner, in the short time at my disposal. I merely wish to draw your attention to the commonest and most important tests, and to point out some great errors in connection with urine-testing which are very generally committed by medical practitioners—errors which in many cases render the examination quite worthless. Let us at once pass on to instances of this kind. A medical man requests his patient to send him a sample of his urine, and a quantity varying from two to eight fluid ounces is supplied and in due course examined. Now if the question to be decided is simply the presence or absence of an abnormal substance, such as sugar, bile, or albumen, the sample of urine thus supplied will answer the purpose. But if the specific gravity be required, or if the percentage of urea, phosphates, chlorides, sulphates, or of any other constitutent is to be ascertained, then this mode of examining a sample of urine which does not represent the chemical composition of the entire renal discharge of twenty-four hours is highly objectionable. If I say that portions of urine passed by the same man at different hours of the day or night vary very considerably in their composition, and that the quantitative analyses of any such single portion, whether passed in the morning, afternoon, or evening, affords no satisfactory insight into the patient's condition, I am merely uttering a truth which is known, or ought to be known, to every medical practitioner. Nevertheless, this truth is very generally ignored. Small samples of urine, which in no way represent the daily discharge, pass day after day from the medical man, or, by his orders, direct from the patient, into the hands of the analysts, and however correct the analyses may be, they will be useless in very many cases, and lead to erroneous conclusions. Instead of so doing the whole quantity of urine passed within twenty-four hours should be collected, mixed and measured, and a portion of this mixture submitted to an analysis. If medical men forget this fact, let chemists who are called upon to undertake urinary analyses remind them of it, and let them do so persistently as long as their efforts are not successful. Let us look at a few practical instances The specific gravity of healthy urine collected during twenty-four hours usually ranges between 1·016 and 1·024, the normal quantity discharged within that time being from 1200 to 1600 cubic centimetres, or from 40 to 56 fluid ounces. The density of the various samples collected during that time, if estimated separately, may however vary far more considerably, so that the density of one portion may be below 1·016, and that of another portion may be above 1·030, although the whole mixture shows the

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average normal density of 1·020. If by copious water drinking the daily quantity of urine from a healthy person be increased to 2000 c.c. or beyond, or if it be decreased in another case by a scanty consumption of liquids to 800 c.c , or below, the specific gravity of the urines would be lower or higher accordingly, and although the percentage of solid constituents in such urines might appear abnormal, yet the total quantity of solid matter discharged within twenty-four hours would be about equal in both cases, and would indicate a healthy condition in either of the two persons. Thus it will be seen that if the precaution of collecting and measuring the entire quantity of twenty-four hours be neglected the density may vary enormously. It may be as low as 1·005 in one case, and it may be 1·035 in another case, and yet a medical man might commit a serious error were he to assume a hydraemic state in the former or a diabetic state in the latter case. No reliable conclusion of any kind can be drawn from the specific gravity in either instance, and it might therefore just as well be left undetermined. The only exceptional instance in which the mere density, regardless of the above precautions, affords a valuable diagnostic expedient is that of a pale-coloured urine of very high specific gravity. In many cases it is of great importance to ascertain the exact quantity of urea or that of phosphates or chlorides, but here again it is almost equally necessary, if not more so, to take the total daily volume of urine into account as the mere percentage of those substances contained in a small sample of the urine proves nothing whatever. Yet we are constantly called upon to carry out such examinations and the most unwarrantable inferences are often drawn from our results by members of the medical profession. Contrary to my clearly expressed desire as to the form in which the urine should be supplied to me for the purpose of a quantitative analysis, I have had to undertake many such analysis of samples of urine not representing the composition of the whole day's discharge, which have never been collected or measured; and whatever the value of the qualitative and the miscroscopic examinations may have been in such cases, the quantities per cent. of urea, phosphoric acid, etc., might as well have been left out from the report. On one occasion a large percentage of phosphates was found, and the medical gentleman, a physician of high repute, looked upon this as indicating an increased waste of nerve substance. A careful examination however showed that the phosphates discharged with the urine within twenty-four hours fell considerably short of their normal amount. A gentleman suffering from saccharine diabetes had his urine examined by a chemist on the continent who found 5·5 per cent. of sugar. Shortly afterwards he requested me to make an analysis of his urine and supplied me with the entire quantity collected in twenty-four hours, amounting to 2600 cubic centimetres. I found 5·3 per cent. of sugar, which represents a discharge of 138 grammes of sugar per

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day. He went again on a tour to the continent, and improved much in general health and strength. When he returned to England four months afterwards he seemed much alarmed by the result of an analysis of his urine made by a French chemist who had found six per cent. of sugar I also examined his urine with the same result, but far from there being any cause for alarm, the patient was undoubtedly much better, for though the sugar amounted to six per cent. the quantity of urine passed within twenty-four hours was only 1550 cubic centimetres, showing that the daily discharge of sugar had fallen from 138 to 93 grammes. The percentage alone seemed to indicate a worse condition, but in combination with the measurement of the urine it showed a vast improvement. I may here mention that the percentage of sugar in the urine of a diabetic patient also varies exceedingly at different hours of the day and night and under the influence of diet.

Of course, there is not always a necessity for mixing the urines passed during the whole day and night, in order to make a useful quantitave analysis. In cases of acute inflammatory diseases and the like, where a careful and uniform diet is observed day and night, there is not much variation in the composition of the urines passed at different hours, so that any sample may be looked upon as fairly representative, and fit for the determination of specific gravity, urea, phosphates, etc. But even then the quantity of urine passed in twenty-four hours should be at least approximately known and taken into consideration. In these cases a quantitative analysis will have more of a prognostic than a diagnostic importance, whilst my remarks refer chiefly to the numerous instances of chronic disorders in which a quantitative analysis is desired for the diagnosis.

From these general remarks on quantitative analysis of urine, I will now turn to the qualitative tests for albumen and sugar, the two abnormal substances most commonly sought for in urine.

The means generally employed for the detection of albumen are —1. The application of heat; and 2. The addition of nitric acid. The manner in which these tests are performed and the precautions which must be observed to avoid mistakes, are so generally known to chemists, that I will not trouble you with a description of them. Whichever of the two tests is used, the detection of an appreciable amount of albumen is always an easy matter. But when we have to search for exceedingly small traces of that substance, which no doubt occur in the urine of patients long before the chronic state of Bright's disease is suspected or recognized, then the question which of the tests should be preferred becomes undoubtedly one of great importance. Our modern authors have decided this question unhesitatingly in favor of the nitric acid test, which is to be so applied that the acid is poured very carefully into the urine, so that it does not mix with it, but forms a distinct layer at the bottom, above which the hazy zone of coagulated albumen shows with great pre-

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cision. This is no doubt a delicate test, but, on the strength of very numerous experiments which I have made on the subject, I am justified in asserting that it is far surpassed in delicacy by a simple modification of the heat test, which I shall presently describe. You all know that albumen is not coagulated by heat in alkaline urines, and that it is not completely coagulated if the reaction of the urine be neutral, for which reasons alkaline or neutral urines are slightly acidified by acetic acid before the heat test is applied. It is also well known that an excess of acetic acid will greatly interfere with the test, and completely prevent the coagulation of traces of albumen. Analysts who have devoted much attention to the tests for albumen will agree with me that even as little as a few drops of acetic acid, the quantity generally recommended to be added to about half a test-tubeful of neutral urine, may be sufficient to prevent the detection of very minute traces of albumen. If the urine be acid, there is, of course, no acetic acid added before heating, but in this case also small traces of albumen are often overlooked, as Bence Jones has pointed out to be the case, where large doses of nitric or hydrochloric acid are taken medicinally. In such cases it is recommended to neutralize the urine, or almost to neutralize it by ammonia. There are, however, acid states of the urine in patients who have not taken any mineral acids, which also prevent the coagulation of very small traces of albumen, and numerous experiments which I have made have convinced me that in every instance in which a trace of albumen could be detected by the nitric acid test and not by heat, the failure in the latter test was attritutable to the acid state of the urine. I therefore propose the following modification of the heat test which I have found to answer remarkably well. Add solution of ammonia to the urine until just perceptibly alkaline, filter and add diluted acetic acid very cautiously until the urine acquires a faint acid reaction, avoiding the use of a single drop more than required. Now place equal quantities of this mixture into two test tubes of equal size, heat one of them to ebullition and compare it with the cold sample contained in the other test tube. The least turbidity is thus distinctly observed, and gives absolute proof of the presence of albumen, the error of confounding phosphates with albumen being out of the question, as they are precipitated by the ammonia, and removed by filtration. Proceeding in this way we can find even such faint traces of albumen as will escape detection by the nitric acid test. This test can of course be used in every instance, whilst the nitric acid test is not suitable for urines containing deposits of urates. It surpasses the nitric acid test in general applicability and in delicacy.

How greatly the internal use of mineral acids may interfere with the detection of albumen by the ordinary mode of heating may be seen from the following case. A physician delivered to me a

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sample of blood-red colored urine from a patient suffering from hæmatinuria, and requested me to estimate the quantity of urea. To do this it was of course necessary first to remove the albumen, which, as a matter of course, was present. The urine was strongly acid and remained perfectly clear upon boiling, and also upon boiling with a drop of acetic acid, not a trace of albumen being coagulated. After treating it with solution of ammonia, and then with dilute acetic acid in the manner described, a very considerable quantity of coagulum separated upon boiling, and the pale yellow filtrate was now perfectly fit for the determination of urea. I concluded that mineral acids had been administered, and the physician confirmed my supposition.

Permit me now to offer a few remarks on the detection of sugar in urine, or rather on the copper test, which is generally acknowledged to be the best and most reliable. This test is certainly a delicate and reliable one in the hands of an experienced manipulator, but it is altogether unsafe in the hands of medical men or of analytical chemists who have not made a close and special study of urinary examinations. Thus we find that in applying the copper test in the ordinary and well known way, sugar is very frequently found where there is none, and is not detected where it is present, and such mistakes are made, too, by analyists of scientific eminence. Not that there is any difficulty in detecting sugar in a decidedly diabetic urine, for such urine may be looked upon as almost a pure solution of grape sugar, containing the ordinary normal constituents of urine in such small quantities that they do not interfere with the test, but the detection of traces of sugar in non-diabetic urine is a very different and much more difficult task, yet it is one of very great importance indeed, as it may enable the physician to discover and perhaps to remove a tendency to diabetes before it develops into the actual disease. As a rule, diabetes is not recognized or suspected until one or more of the peculiar symptoms manifest themselves, and the urine is then found, on examination, to be of a decidedly diabetic character. But it can hardly be supposed that this disease comes on suddenly, or that a man is quite healthy to-day, and discharges urine containing 5 per cent. of sugar to-morrow. There is most probably a time, long before the actual disease shows itself by outward symptoms, when the urine still contains the ordinary constituents in normal quantities, and in addition to them a minute trace of sugar, which may gradually increase until its quantity is such that the disease is confirmed and perhaps incurable. If this be so, it must appear important that we should be able to discover even very small traces of sugar in otherwise healthy urine. Numerous modifications of the copper test have been recommended, most of which still require experienced hands, and yet will fail to detect sugar in mere traces. There is one, however, which appears perfectly satisfactory, and which is so strikingly superior to all the

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others, that I think it ought to be universally adopted. I mean the modification of the copper test proposed by Dr. William Roberts, in his work on 'Urinary and Renal Diseases.' It enables an analyst, inexperienced in urine testing, to find one-twentieth of a per cent of sugar, whilst with a little practice he will soon learn to detect as little as a one-fortieth of a per cent. without fear of an error. The test is best performed in the following way:—Heat in a test tube two fluid drachms of Fehling's standard solution of copper, and, when boiling, add five to ten drops of the urine to be tested; if sugar be abundant, as in a decidedly diabetic urine, a yellowish or brick-red opacity and deposit will be produced. If no such reaction ensue, test for traces of sugar by adding one and a-half fluid drachms of the urine to the hot liquid, heat again to ebullition, and set aside for some time. If no milkiness is produced as the mixture cools, the urine is either quite free from sugar, or at any rate contains less than one-fortieth of a per cent. If the quantity of sugar is very small, viz., from ½ of a per cent. to one-fortieth of a per cent. the precipitation of the yellow or red cuprous oxide does not take place immediately, but ocours after some time as the liquid cools, and the manner of the change is peculiar. First, the mixture loses its transparency, and passes from a clear bluish green to a light greenish opacity, looking just as if some drops of milk had fallen into the tube. This green milky appearance is quite characteristic of sugar. In performing this test for the first time, a difficulty may be experienced on account of the phosphates of the urine being precipitated by the alkali of the test solution. These phosphates however, are thrown down in large flakes, which are seen, floating in a clear bluish-green medium by holding the tube between the eye and the light. The presence of sugar does away with all transparency, which gives place to a milky greenish or yellowish opacity. This mode of applying the copper test is simple, very delicate, and thoroughly reliable. It is based upon the fact that urine which is free from sugar never discharges the colour from more than an equal bulk of Fehling's solution. For this reason, a little more of test solution is used than of the urine. Fehling's solution is apt to deteriorate by keeping, so that without any addition it may cause a precipitation of cuprous oxide upon boiling; and for this reason, Lehmann and others have condemned it as a test for sugar. Proceeding, however, in the manner described, the test solution is boiled first, and if it remains clear there is a proof that it is in good condition. If instead, it forms a deposit on boiling, it must be rejected and a fresh supply of it made.

I have dwelt at such length on this modification of Trommer's copper test, because I believe it is not generally known amongst chemists, and because I am so thoroughly convinced of its practical utility and its superiority over all other sugar tests that I feel sure it need only be tried to be at once adopted. The other tests for sugar

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in urine, viz., fermentation, boiling with solution of potash, boiling with carbonate of sodium and subnitrate of bismuth, etc., are far less delicate, and very apt to lead to errors, whenever traces of sugar are sought for.

EFFECT OF ABSOLUTE ALCOHOL UPON SOME CHEMICAL REACTIONS.*

There are certain chemical reactions for which moisture is necessary, and these will not of course take place in strong alcohol. Aug. Vogel calls attention to the fact that dry litmus paper will not be reddened by absolute alcohol, sulphuric ether, and other ethers, even when they contain a considerable quantity of acid. They will, on the contrary, immediately impart a deep red to a tincture of litmus.

There are two other reactions which depend upon the strength of the alcohol, namely, the iodide of starch reaction, and the spontaneous ignition of potassium thrown upon alcohol. If a piece of dry starch paper be dipped into a solution of iodine in absolute alcohol, no blue color will be produced. The paper is turned more or less yellow or brown, according to the strength of the tincture of iodine, and on being exposed for some time to the moisture of the atmosphere it turns blue. On moistening the paper, it turns blue immediately. If the tincture of iodine contains a certain quantity of water, the starch paper is blued as soon as it is immersed. This affords a convenient test for the strength or specific gravity of the alcohol. Prof. Vogel's experiments show that alcohol of 0.88 sp. gr., or 66.83 per cent., is the weakest alcohol that can be employed without causing the starch to turn blue. If a tincture prepared with this alcohol is but slightly diluted, the starch paper will be blued the instant it is immersed in it. This reaction might be employed practically for determining the strength of alcohol when an alcoholometer was not at hand. If the alcohol were above this test, water might be added from a graduated vessel or pipette, until the reaction set in. If the alcohol were below this test, a measured quantity of absolute alcohol could be added until the starch was no longer blued. This test could be employed with advantage in alcoholic liquors containing large quantities of sugar, and where it is necessary to distil off the alcohol before it can be measured with the hydrometer.

An instructive lecture experiment consists in preparing starch paper, immersing it when dry in an alcoholic solution of iodine, and drying in vacuo over sulphuric acid. If carefully protected from moisture and light it will not turn blue, but, when written upon with a pen dipped in water, the writing appears of a deep blue. Griesmair

*From the Journal of Applied Chemistry.

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gives the following formula for preparing the starch paste: 3.5 grams of wheat starch is triturated with 50 c. c. of boiling water; after a few minutes it is filtered through a double thickness of Swedish filter paper. This filtrate contains one part of starch to 2,500 parts of water.

When potassium is thrown upon alcohol of 0.823 sp. gr. it will not take fire, but in contact with alcohol of 0.830 sp. gr. it takes fire instantly at ordinary temperatures. This furnishes a convenient test for alcohol of this strength.

A hygrometer and barometer has been patented in England recently by W. B. Woodbury, which depends upon the change of color, produced in chloride of cobalt by moisture. A strip of paper is soaked in a strong solution of a cobalt salt, containing also some common salt and gum arabic. This prepared paper is blue in a dry atmosphere, but passes through various tints from blue to rose-red in an atmosphere more or less most. Vogel tried to use this paper for determining the water in alcohol and glycerin, but found the gradual change of tint rendered it much less suitable for this purpose than the starch and iodine paper.

COCOA.*

Consequent upon the passing of the recent Adulteration Act, the sale and manufacture of cocoa have received considerable attention of late, and have much puzzled certain metropolitan magistrates and analysts, who seem to be very uncertain in their opinion as to the best form in which cocoa should be sold to the public. On the one hand, it is asserted that, scientifically speaking, cocoa is at present sold and manufactured in a not altogether commendable manner. As our readers are aware, "admixture" is a great element in the manufacture, and the many soluble cocoas offered to the public all contain a greater or less amount of sugar and farina in their composition. There are certain scientific men who contend that this is unquestionably an adulteration of cocoa, that the article does not require these admixtures, that they debase it, and that the public ought to get the benefit of the cocoa-nib in its pure form. On the other hand, the manufacturers of the cheap, loose cocoa assert that these admixtures do not in any way depreciate the cocoa, that, in fact, they improve it, and render it saleable as a cheap commodity amongst consumers, and that, generally speaking, they repudiate the idea of adulteration in connection with these goods. Prosecutions have arisen with regard to cocoa under the Adulteration Act, and one of the most important (that heard before Mr. D'Eyncourt, the

*From the Pharmaceutical Journal and Transactions.

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magistrate at Marylebone) was reported in the Pharmaceutical Journal at the time. In this case the cocoa manufacturers got the best of it. They showed conclusively that there was nothing deleterious in the article as they made it, and that, as a practical fact, the admixture of sugar and farina was necessary, in order to popularize that article with the public, and make it a general and cheap article of sale. Mr. D'Eyncourt, after hearing lengthened arguments on each side, dismissed the summons, declaring his opinion that the soluble cocoa could not be regarded as an adulterated article.

It will not be uninteresting if we shortly point out how materially this branch of our commerce has developed. Going as far back as thirty years, or say to 1840, we find that the imports of cocoa into the United Kingdom then amounted to 3,499,746 lbs. ; in 1850 this amount had increased to 4,478,252 ; in 1860 it was 9,089,860 lbs. ; and in 1870 the total reached the vast amount of 14,793,950 lbs. This augmentation is a remarkable fact, and speaks volumes as to the increasing popularity of the article with the public. Most of this cocoa, as thus imported, is manufactured in the loose soluble cocoas which we see in the shops, and here we have convincing proof that the method of manufacture adopted of late years has been a great success, or our imports of cocoa would not have increased with such startling rapidity. It may be mentioned, too, as an interesting fact that the imports of cocoa for the first eight months of the present year amounted to no less than 15,372,502 lbs. against 13,284,369 lbs. in the same period of 1872, and 13,688,749 lbs. in the corresponding period of 1871.

The importance of the cocoa trade, as a distinct branch of the industry of the country, will be readily perceived from the statistics which we have just quoted. We thus see the amount which is imported, and which is manufactured into the various forms in which the article is generally sold to the British public. The greater portion—in fact, nearly all—finds its way into consumption in the shape of cocoa-powder, commonly and popularly known as soluble cocoa, and we are quite right in saying that very little of the pure nib is sold. The public much prefer the article as it is ordinarly sold, and do not seem to be partial to the theory that the pure nib is better for them. Considering the matter quite impartially, it is certain that as a beverage we get cocoa very good now-a-days, and we cannot conscientiously complain of our cocoa manufacturers. With regard to the prosecutions which have already resulted, it is satisfactory that they have nearly always ended in favour of the manufacturers, and corroborate the position they assume—viz., that they sell a perfectly pure and wholesome article of consumption, most useful and acceptable to the community at large.

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LOSS OF DRUGS BY POWDERING.

The following table was lately issued by the Philadelphia Drug Exchange and is reproduced in the *American Journal of Pharmacy*. It exhibits the results from a number of trials of each article, covering a period of several years, and was prepared at one of the drug mills of Philadelphia. These losses, as will readily be understood, vary as the dryness of the article varies:

	Per cent.
Acid, Tartaric	¾ to 1
Aconite Root	2 to 5
Allspice	1½
Aloes, Cape	6 to 7½
Socotrine	8 to 10
Alum	½ to 1
Argols, Red	2 to 3
White	½ to ¾ of 1
Assafœtida	9 to 11
Barberry Bark	3
Bayberry Bark	4
Bean of St. Ignatius	1 to 3
Benzoin	1
Black Lead	½ to ¾ of 1
Bloodroot	3 to 4
Blue Vitriol	2
Bole, Armenian	1
Borax	¾ of 1
Buchu	3 to 4
Butternut Bark	3½
Calisaya Bark	3 to 5
Canella Alba Bark	3
Cantharides, powdered	2 to 3
Capsicum	7 to 9
Cassia	3
Castile Soap	23 to 25
Cloves	3
Cochineal	½ to 1
Colocynth Apple, powdered	4 to 5½
Copperas, when dried	7
Corrosive Sublimate	1½
Cream of Tartar	½ to ¾ of 1
Cubebs	1½
Elm Bark	3 to 4
Ergot	2 to 3
Euphorbium	½ to 1
Fenugreek	3 to 3½
Flaxseed	1 to 2
Gamboge	3 to 4
Gentian Root	6 to 13
Ginger, African	3
Jamaica	3
Gum Arabic	4
Indigo	2
Ipecacuanha	3 to 4
Jalap	9 to 10
Lac Dye	2
Liquorice Root	
chipped and bruised	3 to 4
powdered	10 to 12
Liquorice, stick	10
Mace	1
Mandrake	4 to 5
Manganese, Black Oxide	1½
Mustard	6 to 7
Myrrh	8 to 10
Nut Galls	4
Nux Vomica	4 to 5
Opium	18
Orange Peel	3 to 5
Orris Root, powdered	6 to 8
Pepper, Black	2½
Poplar Bark	1
Potassa Prussiate	1½
Prickly Ash Bark	1 to 2
Pumice Stone	2½
Rhubarb, powdered	3 to 4
Sal Ammoniac	1
Sarsaparilla,	
chipped and bruised	4 to 5
finely ground	10 to 13
Scammony	4 to 5
Senna	3 to 4
Shellac	2 to 3
Snakeroot, Black	3 to 4
Squills	3 to 5
Sulphur	1½
Valerian	3 to 5
Vanilla Beans	4 to 5
Wild Cherry Bark	3 to 5

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THE LAVENDER FIELDS OF HERTFORDSHIRE.

The following interesting sketch was published in *Chambers' Journal* for August, from which it was reprinted in the *Pharmaceutical Journal & Transactions:*

Comparatively few persons are aware to how large an extent the culture of lavender for commercial purposes is carried on within a radius of thirty miles from London. In the county of Surrey alone, there are nearly three hundred and fifty acres of land devoted to its growth; and the total extent of the lavender fields in the London district cannot fall short of five hundred acres. Although it is only of recent years that the culture of the plant in England has been sufficiently extensive to raise it to the dignity of a recognized industry, the dried flowers have been used from time immemorial as a perfume; indeed, it acquired the name given to it by the Romans, *lavandula*, from the use to which it was applied in scenting the water of the bath.

The lavender plant grows wild in some part of Italy and the island of Sicily, but it is uncertain at what period it was introduced into England. Shakespeare, in the "Winter's Tale," puts these words into the mouth of Perdita:

> "Here's flowers for you;
> Hot lavender, mint, savory, marjoram;
> The marigold, that goes to bed with the sun,
> And with him rises weeping: these are flowers
> Of middle summer."

True, the scene is laid in Bohemia; but it is evident by the context that the plants named were such as were usually to be found in an English shepherd's garden as early as the time of Elizabeth.

Passing over the intervening three centuries, let us come at once to the subject of our sketch, the lavender fields of Hertfordshire. A hour's journey by the Great Northern Railway, through a charming tract of country, past the historic houses of Hatfield and Knebworth, which lie hidden by trees on the traveller's right hand; over that grand engineering mistake, the Welwyn Viaduct, beneath which trickles the tiny river Mimram, through Stevenage, where Lucas the hermit, wrapped in his dirty blanket, still remains as when he served Charles Dickens as a model for Tom Tiddler—passing all these, we at length find ourselves, as the train slackens its speed, at the bottom of what seems to be an extensive chalk pit. This is the northern outcrop of the London basin; and the station at which we alight as soon as the deep white cutting is passed, is Hitchin.

At this place, some fifty years ago the experiment was first made by a Mr. Perks of growing lavender as a source of profit, so well did it succeed, that there are now about thirty-five acres of land

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in Hitchin devoted to its culture, yielding sufficient essential oil to produce upwards of two thousand gallons of lavender-water annually. A visit to the fields and laboratory, during the latter part of July or the beginning of August, when the flowers are in full bloom, is in itself worth the trouble of a journey to Hitchin; to say nothing of the special attractions which the neighborhood offers to the botanist, geologist, and antiquary.

The largest field is situated at the western side of the quaint old town, near the house in which George Chapman, the friend of Shakespeare and Ben Johnson, completed his translation of Homer. The young plants are bedded out in November, at a uniform distance of one yard apart. Formerly, they were placed at only half that distance; but it is found that a heavier yield is produced from plants set a yard apart, than from double the number at only eighteen inches. When three years old, the plant is at its best; and when it reaches the age of seven years, it has made so much wood that it is more profitable to uproot it, and set a fresh plant. The harvest time depends much on the state of the weather, but it usually commences about the first week in August. The flowers are cut with a sickle, bound up in small sheaves, and immediately carried to the distillery. There the stalks are cut off, leaving but little more than the flowers, by which the bouquet of the oil afterwards extracted is much improved, though the quantity of the oil is sensibly diminished. Much care is needed on the part of those who handle the sheaves in the distilling house to guard against being stung by the bees which remain attached to the flowers. The temperance, industry, and providence of these insects are proverbial; yet their behavior in lavender fields, especially towards the end of the season, when the flowers are fully developed, cannot be to severely reprobated. So careless are they of the good reputation they have earned, that they refuse to leave their luscious feast even when it is laid on the trimming bench; and hundreds are thrown into the still, notwithstanding the efforts to dislodge them, in a state of helpless intoxication.

After the flowers are separated from the stalks, they are put in the still, which is a copper vessel holding about two hundred gallons, beneath which is a furnace. The flowers are pressed down tight, after which the still is filled with boiling water, and the head carefully fitted on and luted with clay or linseed meal, so as to prevent the escape of steam. The head somewhat resembles an enormous tobacco pipe, the bowl being placed over the still. The stem of the pipe, called the worm, is coiled round and round in a vessel of cold water known as the worm-tub. As the steam is driven off through the head of the still, it is condensed in passing through the worm-tub, and runs into a vessel beneath. The essential oil is brought away with the condensed steam, and floats on the top. A siphon sucks out the water beneath; and as, in its passage through the worm, it has become impregnated with the oil, it is utilized by being

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made hot, and again put into the still, to boil the next batch. As the water in the worm-tub becomes heated by the steam-tube passing through it, cold water is injected from beneath, which forces off the upper portion of the water, which has become too hot to perform its task of condensation. In about four hours the still has given off all its steam, and the result is about a pint of essential oil, of a light yellow color. In some seasons, it will fall far short of that quantity, while at other times it will greatly exceed it. When the condensed steam and oil have ceased to flow, the head of the still is hoisted off, the sodden mass of flowers is taken out with long forks, and the still is refilled. The refuse is taken back to the fields, and there allowed to remain, until it is used as manure for the next year's crop.

When the oil is first distilled, it has a peculiar empyreumatic odour; but by being kept in bottles for twelve months it loses much of its harshness. It is still, however, unfit to be used as a perfume in its natural state. In order to convert the essential oil into what is known as lavender-water, it is mixed with from twenty to forty times its bulk of spirit, and with just a trace of neroli, or other essential oil, according to the taste of the compounder.

Some idea of the enormous consumption of lavender-oil may be gained from the fact, that there is annually produced in England sufficient oil to produce nearly thirty thousand gallons of spirit of lavender. A large quantity is used in the production of other perfumes of more pretentious names. Soaps and toilet washes are chiefly scented with French and Italian oil, which is worth but from eight to ten shillings a pound, while the English oil is valued at four times that price. The difference in the value is chiefly due to the fact, that in the foreign distilleries the whole of the stalks, and even the leaves, are put in the still, whereas in England, particularly at Hitchin, where even more care is taken than in the Surrey fields, nothing but the choicest blossoms is used.

CORK PRODUCTION AND MANUFACTURE IN SPAIN.*

The cork tree is found in its wild state in the south of Portugal, Africa, and Spain, In the latter country the preparation of the bark for foreign markets is one of the staple industries, furnishing labor and subsistance to a large proportion of the population.

The tree is a peculiar kind of oak, aud the cork is the soft cellular interior bark, lying just inside the exterior woody covering. It is removed by making several longitudinal clefts up and down the

* From the Chemist & Druggist.

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trunk, and then girdling the latter with horizontal incisions. The operation is not performed, however, until the tree has attained a certain age, generally fifteen years, and the first crop is employed only for inferior purposes. Seven years afterwards the tree will have another coating of bark, which is stripped and used for making corks, and so on every five to seven years, according to the quality of the ground. The tree does not suffer from the process of scraping, and it is said generally lives from one to two hundred years.

Between the cork and the tree there is another bark that is used for tanning; but this is only removed when the tree is cut down. It is a curious fact that if any portion of this inner coating be destroyed, further formation of the cork on the injured spot ceases. After the layers of the cork are stripped, they are inspected and assorted, according to their sizes and quality, those of the finest texture being of the greatest value. The inferior portions are generally sorted out, their crust burnt off, and sold mostly for floats, thus receiving the name of fishing cork. The better qualities are first boiled and scraped, and then blackened over a coal fire, the object being to make the surface smooth, and at the same time to conceal flaws. Some varieties, generally the best, are faced in order to exhibit the fineness of their texture. After being forwarded to the warehouse, the largest slabs are cut into pieces of about three and a-half feet in length, eighteen inches in width, and ranging from one half-inch to three inches in thickness. Drying and packing in bales weighing one hundred and fifty pounds each follows, and the cork is ready for exportation.

From five to twenty-five cents per pound are the usual prices paid by the cork cutter in America for the rough material as it arrives in the bale. It then undergoes another assorting, and a thorough steaming, in a chest designed for the purpose, the latter process softening the cork and rendering in easy to cut. To divide the substance special machinery is employed. Rapidly revolving circular knives are used, which cut by a drawing motion, as crushing strokes break the cork or cause it to crumble. The workman sitting in front of the machine places a piece of cork of suitable size in a revolving spindle, by which it is firmly held. The spindle is raised a measured distance, and the edges of the cork come in contact with the rotating knife, which smooths them off and leaves its work in a perfectly cylindrical form. Another method is to place the rough bits of cork in grooves on the circumference of a wheel which, working automically, carries each piece to a point where its ends are received by a small lathe. The cork is then revolved slowly while a large circular knife removes a thin shaving, thus giving it the necessary taper, and a surface as true and smooth as if sand-papered. As fast as a cork is finished by the automatic lathe it is released and another substituted in its place.

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Every portion of the material is utilised, either as stuffing for cushions or life preservers, or as a non-conducting substance for placing between walls or floors of buildings to deaden sound.

THE EDUCATION OF PHARMACISTS IN GERMANY.*

On the 18th of July of this year, the following official regulations affecting the education of German pharmacists were proclaimed, and will come into force on the 1st of January, 1874. A young man who wishes to become an apprentice to an apothecary must, first of all, produce his certificate of having studied for one year in the second-class of a "Gymnasium," or the first-class of a "Realschule," and of having satisfactorily passed the usual examination. This is the same certificate which entitles all the German youth to serve one year in lieu of the regulation three years in the army.

The apprenticeship is to last three years, and during that time the pupil's earliest duty is to work in the shop, and thus make himself familiar with the usual drugs and chemicals which are to be his future companions. Then he goes to the laboratory, and learns to make the various chemical and pharmaceutical preparations; and besides, is expected to study works relating to the science of his profession. An apprentice in Germany very seldom now pays a premium; he is provided with board and lodging, and has every other Sunday free. But, especially in the summer, he is expected to employ some portion of this holiday in a botanical excursion.

He must have so employed these three years as to understand the preparation of chemical and pharmaceutic compounds, and the nature and properties, both chemical and physical, of the *Materia Medica*. In this he is tested by a district commission, which is composed of one physician (the *Kreisphysicus*, a State-appointed medical chief of the district), one apotheker, and the apotheker with whom the pupil has been apprenticed. Besides his scientific examination, he is required to translate the Pharmacopœia readily and accurately from Latin into German, to prepare a prescription, and to price it according to the Government tax.

In the large towns the apprentices enjoy more freedom, and better opportunities for study. In Berlin there are lectures provided two evenings a week, as it is generally the case that the pupils are too busy during the day to have time to acquire the necessary theoretical education. In Berlin too, as the distance from the rural districts prohibits the opportunity of botanical excursions, most of them visit the small botanical gardens behind the university, once or twice a week, where for a nominal payment, they can find an ex-

* Berlin Correspondent of the Chemist and Druggist.

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cellently arranged and very complete set of specimens of medicinal plants.

The apprenticeship completed and the examination passed, the tyro must now spend three years as an assistant. He generally employs this period in several situations. It is required, however, that at least half the time should be spent in his own country. He takes partly *receptur stelle* (situations in the dispensing department), or *defectur stelle* (in the preparation department), that is to say he works alternately in the apotheke and the laboratory, as except in quite small businesses the same assistant very seldom fulfils both functions. For this he receives about £30 a year with board and lodging. In the large towns the board is sometimes compounded for at the rate of about 50s. per month. Every assistant has every other Sunday free, and also one afternoon each week, leaving business, too, every alternate evening at six or seven p.m. The night service is of course divided among the assistants, and neither the assistants, nor the proprietors get any extra payment for night dispensing.

The proprietor of the apotheke is required to see that during his time of service, the assistant continues to study, makes botanic excursions, and especially that the "laborant" keeps a journal and duly enters short memoranda of all his work.

This second stage over, the university career commences. The pharmaceutical candidate must attend lectures during two semestres on organic and inorganic chemistry, systematic and practical botany, and physic, and also practice qualitative and quantitative analysis in the university laboratory. He has also to attend lectures on the history of chemistry, microscopy, and pharmacy. Also sometimes on mineralogy and chemical technology. Each of these courses of lectures cost about £1 per semestre, and attendance in the laboratory for £2 to £3 for the like period. Generally the pharmaceutical students form an association amongst themselves, at each of the universities, partly for recreation and society, and partly for reading papers, discussions, etc. Each of the twenty German universities possesses a chemical laboratory, in most cases well furnished with all requisities, apparatus, etc., separate stands for each student, each provided with a gas and water supply, etc.; furnaces, a special room for operations with stinking gas, a balance room, * a library, and several other departments. Each student is visited and instructed once or twice a day, by the professor or in the larger laboratories by his assistants.

After two semestres of study, the candidate may present himself for examination. The examination is in three parts. The first is a written one, "unter clausur," under lock and key as we may say, and comprises a theme on analytical and one on organic or in-

* In the balance room of the chemical laboratory of the Berlin University, we have counted eighteen valuable balances provided for the students.—[Ed. C. & D.]

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organic chemistry to be finished in a certain time, a few hours. Next the candidate is required to make a qualitative and quantitative analysis in the laboratory of the university also "unter clausur;" then in an apotheke of the town, he must make up two prescriptions, and one pharmaceutical preparation. Finally, he is examined for a quarter of an hour each by the professor of chemistry, the professor of botany, and the professor of physics, then by an apothecary in the laws governing the profession, and in his general knowledge of shop duties. The examination passed, he receives a diploma endorsed "extremely good," "very good," or "good" as the case may be, and he must next serve his year in the army, after which he is qualified to become the proprietor of an apotheke if he can get one.

I shall give details of German military pharmacy in my next letter.

HASCHISCH.

The natives of the Turkish Empire, and in the north of Africa, are far more addicted to the use of the haschisch (*Cannabis Indica*) than to that of opium. They have a similar effect, yet the former is decidedly preferred. They use either the dry leaves for smoking, or they drink the pressed juice, or use it in the form of cakes soaked with that essence. Much uncertainty prevails among botanists regarding the plant or plants which produce these narcotics—whether they are different species or mere varieties of the common hemp. Probably *C. sativa* and *Indica* are identical, yielding the Gunja and Bhang of the East. Both the above drugs are sold separate in the Indian bazaars, and in external appearance are considerably different. Gunja has a strong aromatic and heavy odour, abounds in resin, and is sold in the form of flowering stalks for smoking with tobacco. It is made up in bundles about two feet long and three inches in diameter, containing about twenty-four plants. Bhang is in the form of dried leaves, without stock, of a dull green colour, not much odour, and only slightly resinous, and its intoxicating properties are considerably less. Bhang is not smoked, but pounded up with water into a pulp so as to make a drink highly conducive to health, and people accustomed to it seldom get sick. Bhang grows in abundance in Tirhoot and Bhagulpoor in the wild state. In Scinde a stimulating infusion made from the plant is much drunk among the upper classes, who imagine that it is an improver of the appetite. Gunja is frequently mixed with tobacco to make it more intoxicating. This is especially done by the Hottentots, who chop the hemp leaves very fine, and smoke them together in this manner. Sometimes the leaves powdered are mixed with aromatics, and thus taken as a beverage, producing much the same effects as opium, only more agreeable.

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Editorial.

SIGN TO BE USED TO MARK UNUSUAL DOSES IN PRESCRIPTIONS.

At the meeting of the British Pharmaceutical Conference, held last month, a paper was read on the advisability of adopting a sign, to be used by medical men, in order to denote the unusually large dose of any remedy ordered by prescription. The author alluded to the necessity of a sign of this kind, aud to the anxiety, delay, and inconvenience which was so often experienced by the pharmacist and patient when a prescription requiring an unusual dose was presented. In such cases the prescriber has to be sought for, thereby entailing loss of time to the dispenser, and perhaps worse to the patient; or the prescription has to be declined; or again, the prescription may be dispensed, and the pharmacist is saddled with a grave sense of responsibility, by no means easy to be borne. In Germany and Austria, where the strong hand of the state interposes, a clearly defined rule has, for some time, been employed, and this fact was held as presumptive evidence—if any be required—that a rule or sign is necessary in England. The proposing of a sign, by pharmacists, might be thought a trespass upon medical ground, but the author was of opinion that as the interests of pharmacists are, in a great measure, so identical, and so intimately bound up with the physician's interest in his patients welfare, that the suggestion, if recommended by the Conference, would be received by the medical profession with proper consideration and respect.

It was thought that the best sign that could be employed would be the prescribers initials, thus:

Tincturæ Digitalis.... ..... ʒiv [J.B.L.]

These initials might be compared with the actual signature, in case of any dispute concerning a prescription to which they were attached; thus following the custom respecting legal documents, in which, in case of corrections, or as a special mark of authenticity initials have a recognized legal value.

The views advanced by the author of the paper received the un-

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animous concurrence of members of the conference, many of whom took the opportunity of stating the necessity of some step being taken, and their entire approval of that proposed. It was therefore resolved that a committee be appointed to confer with the medical profession with a view to obtaining a settlement of the matter.

We have specially called attention to this subject, as the inconvenience, or evil, of which our British friends complain, is felt to a proportionate extent in Canada. We feel assured that our readers will, at once, coincide with what has been said, and would welcome the introduction of a plan similar to that proposed. We think also that the medical profession would gladly fall in with any suggestion which would afford additional security, certainty and despatch, in the prescribing of medicine, and would thereby tend to the mutual benefit of all concerned.

We commend this suggestion to our medical journals and should be glad to hear their opinion on the subject.

AMENDMENTS TO THE MEDICAL ACT.

As intimated in a previous issue, the Medical Council of Ontario intend, during the coming session of the local legislature, to make another attempt to amend the existing Medical Act. A draft of the proposed bill is now before us, and, in many respects, appears to be an improvement on its predecessor. It is not, however, for us to discuss details which affect the medical profession only, nor, at present, to do more than call attention to the clause which affects pharmaceutical interests. We have already given our opinion in regard to the question involved in this clause, and prefer deferring, until another opportunity, any further remarks.

The Section alluded to is that numbered seventeen. It provides for the repeal of section forty-one of the present Act, and the substitution of the following:

"It shall not be lawful for any person not registered to practise Physic, Surgery, or Midwifery in the Province of Ontario for hire, gain, or hope of reward; and if any person not registered under this Act, or the Act hereby amended, shall, for hire, gain or hope of reward, practise, or profess to practise, Physic, Surgery or Midwifery,

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or advertise to give advice in Physic, Surgery or Midwifery, or advertise to give advice in Physic, Surgery or Midwifery, he shall upon a summary conviction thereof before any Justice of the Peace, for any and every such offence pay a penalty not exceeding one hundred dollars, nor less than twenty-five dollars: provided always that nothing contained in this clause shall prevent any person licensed under the Pharmacy Act from compounding medicines, when prescribed by a registered practitioner, nor from selling any medicine in the ordinary course of trade."

A sub-section defines the course in case of non-payment of the fine:

5. "All prosecutions under this Act may be brought or heard before any one or more of Her Majesty's Justices of the Peace having jurisdiction where any such offence has been committed; and such Justices shall have power to award payment of costs in addition to the penalty; and in case the penalty and costs awarded by him or them be not upon conviction forthwith paid, to commit the offender to the common jail, there to be imprisoned for any term not exceeding three months, unless the penalty and costs be sooner paid."

MONTREAL COLLEGE OF PHARMACY.

We are pleased to learn that this institution is in a prosperous condition, and that its efforts in the cause of education are being renewed with increased energy. The lecture season is announced to commence on Monday, November 3rd, when courses on Materia Medica and Toxicology, Botany, and Chemistry, will be delivered. In addition to these a summer session of Field Botany will be held at the proper season. This will be of a thoroughly practical character, and will consist principally of a series of excursions into the surrounding country, for the purpose of collecting specimens, determining their names, and their proper situation in the scheme of vegetation. Students will thus be familiarized with many of our indigenous plants, and will be enabled to classify and name, without difficulty, plants which may subsequently come under their notice. The lectures on chemistry will have an especial direction to pharmaceutical pursuits, and the necessary portions of the science of

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physics will also be embraced. All the classes will be under the direction of Dr. Kollmyer.

Meetings for the discussion of subjects connected with pharmacy, and for the reading of papers, will be held on the first Thursday in each month. We hope, in future, to reproduce these papers, either in abstract or entire; and also to detail the regular progress of the college.

The relation of the Montreal College to the Pharmaceutical Association may not be generally understood by our readers. The former organization had an existence for several years prior to the creation of the Provincial Association, and was then known as the Montreal Chemists' Association. Latterly, it has taken the name it now bears, and it has also affiliated itself with the Quebec Association, of which it may be considered as a local branch. The Act under which the Quebec Association was created is exceedingly limited in extent, confining the powers of the association to matters purely educational. The licensing power still remains with the medical college, but we understand that our Quebec friends are likely soon to free themselves from the thraldom to which they have so long and with such severity been subjected; and that even now they feel sufficiently strong to take the initiatory step, by refusing to go up to the Medical board for examination. It is probable that the local legislature will, during the coming session, break this bar to pharmaceutical progress which the medical men can now barely sustain, and grant to the pharmacists, with every confidence, the right to paddle their own canoe. They have, indeed, had a hard battle to fight; what with apathy and ignorance on one side, and jealousy on the other, they will certainly well earn all they may get.

CORRECTION.—A legal friend informs us that we should have shown a nicer regard for the technicalities of the law, if, in an editorial in last number, in which reference was made to the advantages derived from registration under the Pharmacy Act, we had said that, by registration, druggists were exempted from the conditions and restrictions of the recently passed Act respecting Tavern Licenses, rather than that this Act conferred the right to deal in liquors to be used for medicinal purposes. The matter is, probably, as broad as it is long, but it may be better to make the correction.

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Editorial Summary.

Substitute for the Hypodermic Syringe —In the *British Medical Journal*, Dr. J. M. Crombie suggests a new method of hypodermy, applicable in those cases where a syringe is not procurable, or in those cases where the circumstances of the patient will not allow of the purchase and continued use of such an instrument. The method consists in coating fine silk thread with the required quantity of morphia, this when introduced in the manner of a seton, by means of a fine needle, with the eye close to the point, enables us to deposit the morphia beneath the skin, by slowly drawing the thread through the opening. This suppository has to be dipped in water immediately before application, and as it is passed through, which must be done slowly, a drop or two let fall on the end still to be passed, so as to moisten the morphia. The process does not cause more pain than injection by the syringe, even when the point of the latter is in condition, as only one-eighth of an inch of skin is traversed, and, as it simply requires a needle, does not entail expense, either for purchase or repairs ; and so may be the means of extending the benefit of subcutaneous morphia among the poor, for whom the syringe is too dear and too delicate an instrument.

New Formula for Vallett's Mass.—In order to obviate the tendency of this mass to become hard, by age, J. Donde, (*Am. Jour. Phar.*) proposes the substitution of sugar and glycerine for honey. The proportions recommended are 500 parts sulphate of iron, 600 carbonate of sodium, 280 white sugar, and 150 glycerine. The usual method of precipitation is followed: the carbonate of iron being pressed as dry as possible. The sugar and glycerine are then added, and the whole is evaporated to a pilular consistence. The preparation is said to be sufficiently permanent.

Useful Addition to Mucilage.—The use of gum arabic as a paste or cement is attended with certain well known disadvantages. It renders unsized paper transparent, does not adhere well to wood, or common pasteboard, or to metallic surfaces, glass or earthenware. It is said by the *Journal of Applied Chemistry* that the addition of a solution of 2 parts of sulphate of aluminium to 250 parts

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of mucilage entirely obviates these disadvantages, and also prevents fermentation, acidity and mould.

Furtherance of Original Research.—We learn that, in aid of this object, Professor Tyndall has placed in the hands of a committee, the net profits derived from his lectures delivered recently in the United States. Thirty-five lectures were given realizing $23,100, of this $10,100 were deducted for expenses, leaving the handsome sum of $13,000 to be devoted to the object named.

Extract of Vanilla.—A correspondent of the *Druggists' Circular* proposes a method of preparation which promises some advantages. The beans are cut up fine and macerated for five days in one half the quantity of alcohol to be used. The beans are then separated, by straining, and, it is said, may then be powdered without difficulty. Percolation, in the usual manner, is then resorted to.

Administration of Castor Oil.—The writer alluded to in the preceding paragraph also suggests an original method for making a castor oil mixture which is said to be quite palatable. We give the form for what it is worth: In the bottom of a tumbler pour about six drachms of syrup of sarsaparilla, add a small quantity (about 10 grains) of bicarbonate of soda, stir with a spatula, add about a teaspoonful of a saturated solution of tartaric acid (always kept ready), stir well; this makes a heavy viscid froth. Then pour down the side of the tumbler, so as to sink to the bottom and not mix with the froth, about an ounce of water; then add the oil. The whole is to be drank without agitation.

Composition of Oil of Chamomile.—E. Demarcay, (*Pharm. Jour. & Trans. from Comptes Rendus,*) arrives at the conclusion that oil of chamomile is a mixture of several ethers, among which the angelates and valerianates of butyl and ethyl predominate. The ultimate composition of the oil, its boiling point, and manner of decomposition all confirm this view.

Formula for a new Elixir.—A correspondent of the *Druggists' Circular* is inclined to be facetious in the matter of elixirs—

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more especially those of the beef, iron and strychnine type. He would add a new preparation, to be known as *Elixir of Benzine, Assafœtida and Smart-weed.*

It is made thus:

℞ Smart-weed, benzine and assafœtida, in fine powder, of each..... A handful.
Sweetened water,
Sour cider, of each..... 2 cupfuls.
Mix, and season to suit the taste.

The writer also adds that he has also a valuable formula for an Elixir of Wahoo, Watermelon and Sorghum, with Phosphate of Pumpkin Seeds, which he would part with for a consideration.

Transactions of Pharmaceutical Colleges and Societies.

ONTARIO COLLEGE OF PHARMACY.

A meeting of the Committee on Legislature, appointed at the last meeting of the Council, was held on Monday, October 27th. The following gentlemen were present: Messrs. Lyman, Shapter, Miller, Love and Hodgetts.

The chair was taken by Mr. Lyman, who explained that the special object in view in convening the meeting was the consideration of amendments to the Pharmacy Act. The working of the Act, during the time it had been in force, had revealed certain defects, and it was advisable that these be remedied, and that additions to the Act, embodying several new features, should also be made. He would first call attention to the section relating to the election of officers. Under the existing law, the college was, during the period which intervened between the election of a new council and their taking office, not only without a president, and other officers, but had virtually, no existence. He had conferred with the Attorney General and the decision of this official was to that effect. This point was discussed by the meeting and it was resolved that the necessary alteration be made in the section in question.

The subject of registration of partners was then discussed, and the conclusion arrived at, that no alteration of the Act could be made, or was desirable.

The registration of apprentices and assistants was next considered, and it was thought advisable, that apprentices and assist-

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ants should be registered, and pay an annual fee. In the case of apprentices, the fee be one dollar, and that of assistants two dollars, the former to pass a preliminary examination, the latter the major examination, and each receive the *Pharmaceutical Journal.*

Before holding another meeting, the Secretary was instructed to issue a circular to the members, inviting their co-operation in revising the Act.

GEO. HODGETTS,
Secretary.

MONTREAL COLLEGE OF PHARMACY.

A meeting of the Board of this college, for the election of officers and the transaction of other business, was held on Thursday evening, October 9th. The following gentlemen were appointed officers for the current year :

President, Henry R. Gray.
Vice-President, A. Manson.
Treasurer, John Kerry.
Secretary, J. Mattinson.

The remaining members of the Council are Messrs. H. Lyman, Bolton, Harper, Jackson, Mercer, Muir, McGale and Patton.

Messrs. Mercer and Harper were empowered to fit up a library and museum, and Messrs. McGale, Harper, Patton and Mattinson were appointed as a Lecture Committee.

BRITISH PHARMACEUTICAL CONFERENCE.

The tenth annual meeting of this association was commenced on Tuesday, Sept. 16th, at Bradford, England; Mr. H. B. Brady, F.L.S., F.C.S., of Newcastle-on-Tyne, presided.

The first business of the Conference was the reception of delegates; twelve different associations were represented, and the number of delegates present exceeded that of any former occasion.

An album, containg photographs of officers and prominent members of the American Pharmaceutical Association, was presented by that body, and the thanks of the Conference returned. A telegraphic message, "Our members send to your members hearty fraternal greetings," was also sent to the American Association, which was at that time in session at Richmond. To this, a a suitable reply was received.

After the election of new members, the report of the Executive Committee was read, and the financial statement presented. From

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this it appeared that the expenses were in excess of the receipts. To meet this emergency, and also to provide for the future, the yearly subscription of members was proportionately increased.

The president's address came next in order, but we are sorry that the space at our disposal will not permit our even attempting a summary. A great variety of topics were introduced and treated at length. More especially may be noted the admirable resume of the progress of cinchona cultivation in India, and the complete sketch of pharmaceutical progress during the last few years. The subject of pharmaceutical education was also handled in a very thorough manner; increased facilities for education, dissociation of the educational and examining functions of the Pharmaceutical Society, and greater stringency in the examinations, were strongly advocated.

Of the papers read at the meeting, we cannot give an abstract, as a full report has not yet come to hand. In due course we hope to lay before our readers all such as are of importance. We may note that one of the first papers read will be found in another part of this journal.

Mr. T. B. Groves, of Weymouth, was appointed president for the current year, and it was resolved that the next meeting of the Conference should take place at London.

AMERICAN PHARMACEUTICAL ASSOCIATION.

The twenty-first annual meeting of this Association was held at Richmond, Virginia, on Tuesday, Oct. 16th, and continued during the four succeeding days. The attendance was good, about one hundred and fifty members being present; and, from all accounts, the meeting appears to have been in every respect a success. We have usually been fortunate in procuring a report of the proceedings from the delegate sent by the Ontario College, but, on this occasion the college was not represented, and consequently we have had to take advantage of the reports given in the American journals. We would especially acknowledge our indebtedness to the *Druggist's Circular*, as the following particulars are, in great part, either condensed or taken in full from the excellent summary of proceedings published in that periodical.

As last year, a cable telegram, offering fraternal greetings, was received from the British Pharmaceutical Conference, whose time of meeting is coincident with that of the American Association. To this a suitable reply was sent. The President, Mr. A. E. Ebert, then introduced to the meeting the Mayor of Richmond, who, in a very appropriate address, extended a hearty welcome to those pres-

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ent. The remaining portion of the first day, and part of the next, were taken up by the election of members, appointment of committees, and other business of an official character. The annual election of officers was also held, and the following gentlemen were appointed for the current year: President, Mr. J. F. Hancock; Vice-Presidents, Messrs. Saunders, Buck and Balluff; Treasurer, Mr. C. A. Tufts; Permanent Secretary. Mr. J. M. Maisch.

A communication was read from the late president, Mr. Ebert, offering as an inducement to the furtherance of original investigation, the sum of five hundred dollars, and suggesting the investment of the money so that the interest might be available as a prize to be presented, annually, for the best essay, based on original research, which might be presented for competition. The present was received, the thanks of the Association tendered to the donor, and a committee, for carrying out the necessary arrangements in connection with the gift, was appointed.

A volunteer paper on the purchase and sale of Alcohol was read by Dr. E. R. Squibb; as embodying the experience of the writer, the paper contains much practical information, which at some future time, we hope to lay before our readers.

The third day was devoted to reading answers to the queries of last year.

In response to Query 1, Can a permanently flexible Gelatine Plaster be prepared by some addition to the isinglass used, which will prevent the tendency of the plaster to curl and irritate the skin mechanically?

Mr. H. N. Rittenhouse stated that the experiments he had made proved that an addition of glycerine equal to one-tenth of the isinglass employed was a decided advantage, and would remove the tendency to curl and irritate the skin. The paper detailed the appropriate formula, the proportions of which were—

Russian isinglass.....	10 ounces.
Water.....	3 pints.
Glycerine.....	1 ounce.

These proportions being sufficient for four square yards of silk.

Query 7. "Sapo Viridis" *vel* "Sapo Mollis" is sometimes prescribed. What is the easiest plan of making it from olive oil and liq. potassæ?

In reply to this, Mr. P. Fred. Lehlback forwarded a paper, which was read, stating his experience in preparing it. After alluding to the various oleaginous bodies used in its preparation, he said that the liq. potassæ of the U. S. P. was too dilute to properly prepare it. In order to properly saponify it it required six ounces of caustic potassa to saponify sixteen ounces of olive oil. The paper gave all the minute details to properly accomplish the desired result. With it was submitted two samples, one in accordance with the

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formula, the other colored with indigo, to meet the demand of those who want an article with a green color.

Query 10. Can Balsam of Tolu be rendered emulsionizable like Copaiba?

To this Mr. Bedford responded that he had made many trials, using every method he thought likely to accomplish such a result, but failed to produce a permanent emulsion in any way. He did not think it worth while to prepare any paper simply recording negative results, and would therefore reply verbally that balsam of tolu *cannot* be rendered emulsionizable.

Dr. Squibb read a volunteer paper on the Supply and Quality of Rhubarb as found in the market during the past year, which was accompanied by four samples. The supply of the year was ample in quantity, but not as fine in quality as that of the preceding year. The chests would run more uniform in shape and size, but seemed to be devoid of the agreeable aromatic odor which was formerly noticed. Small chests were scarcely to be found imported now, the large or picul being the size now seen. The loss in odor was doubtless attributable to some artifical method of drying, but in the imperfect knowledge we are able to obtain, it was more conjecture than a proven fact. One sample submitted had all the visible appearance of the Russian rhubarb, which was formerly so popular, and was forwarded to him as a sample of a chest held in the London market at a price far above that asked for any other. As the writer had not seen it broken, nor had any piece as yet been given by Dr. Squibb, it was impossible to say positively that it was the same variety as that formerly known as Russian (or Turkey) rhubarb. If it be not, then the producers have taken unusual pains to imitate the favorite article. At any rate, it is the handsomest sample in market, has a good odor, and will undoubtedly command a ready sale at a higher price than other rhubarb.

Dr. Squibb then read a paper on a new style of Physicians' Pocket-cases, in which the vials are much longer than those usually supplied in this way, and specially adapted to contain fluid preparations which can be dispensed with a graduated pipette that accompanies them, or for pills; these two methods alone insuring accuracy for dispensing at the bedside.

Prof. Markoe read an individual report upon the U. S. Pharmacopœia, prefacing it with the remark that as the Committee had not been organized, and the other members had not been communicated with, he had preferred to present this as a separate paper. He then read it at length, criticising many of the preparations, suggesting alterations, improvements, and amendments. They are, however, too numerous to mention in this account of the meeting.

In reply to Query 12, "What merit has Petroleum Benzine as a solvent for the extraction of oleo-resinous drugs like Buchu, Chenopodium," etc., Mr. J. P. Remington detailed some experiments

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which proved that it was not an effectual solvent for buchu, as the eleo-resin obtained from it would not produce diuresis, while the buchu thus exhausted would yield to ether a product which, when evaporated to the consistence of an oleo-resin, would produce free diuresis. In order to complete other experiments, he asked for the continuance of the paper, which was granted.

Query 15. "Can the proportion of Sugar and Honey be improved in the officinal process for Pil. Ferri Carbonatis?

Mr. E. D. Chipman of Philadelphia responded by a paper in which he advocates the change of the proportions of these ingredients, making the weight of strained honey two troy ounces, and sugar three troy ounces, the rest of the process remaining as at present.

Prof. William Procter read a paper in reply to Query No. 18, as to the "Actual value of Orange-colored Glass, as a means of preventing the chemical action of light on Volatile Oils," but added that as his experience was too limited, he would ask the continuance of the subject.

Query 20. "Cannot an improvement be effected in the material and workmanship of cheap Ointment-Boxes?" This query was for general acceptance, but there being no reply, Messrs. Markoe and Remington each recommended the new style of cheap boxes made by the Mount Washington Box Co. of Boston, not so much for cheapness as for lightness, utility, and neatness.

Query 21. Prof. Maisch read a reply to this query, which related to the proper time of collecting the leaves of certain biennial plants.

Query 24. "Is there no better method of preparing Cucumber Ointment than that now in use by heating the juice with Fats?" In reply, Prof. Procter said that he had originally suggested the formula that had been in use for many years past, but that he had now improved the formula by substituting an oil for a solid fat, and now the proposed plan was to shake the juice with almond oil until the oil has taken up the odor and color of the juice, then removing the juice by decantation, adding a fresh portion of juice, and when this was fully absorbed, removing the juice and filtering the oil through a filter which had been previously imbued with a portion of almond oil, in order to retard the watery portion. The oil thus prepared was set aside as Cucumber Oil, and could be made, as occasion demanded, into ointment, cerate, cold cream, or other unctuous body, the several formulas of which were given.

Query 26. Can any improvement be suggested in Graduated Measures by which greater uniformity can be obtained? was answered by Dr. W. H. Pile. After detailing the examination of a large number of graduated measures, he added that there was no method that could be devised which would not be spoiled in practice by the workmen employed, who do not, or will not, take proper

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pains to insure accuracy. A correct graduated tube or a correct set of weights will always enable the dispenser to make his own graduated measures, or so correct those he purchases as to insure accuracy in them.

A volunteer paper was then read by Mr. Geo. W. Kennedy, of Pottsville, Pa., on Frasera Walteri, which he said might be accepted as a reply to Query No. 2, Does the root of Frasera Walteri contain Berberina? After detailing the experiments for this principle, and failing to find it, he sought for other bitter principles, and found both Gentisic Acid and Gentio-picrin. It doubtless belonged to the Gentian family, and thought the name should be "Frasera Gentiana."

Query 28. An Essay on Labelling Shop Furniture, Stock Bottles and Vials, in view of permanency, regularity, and safety; also a Label Case to facilitate the finding of the same. This was partially answered by Mr. Geo. H. Schaffer, Fort Madison, Iowa, who gave an interesting account of his efforts to remodel his own store on such a plan, and the partial success he had met with. The paper had too many details applying to the painter's duties, but gives some practical suggestions which are worthy of trial.

A considerable portion of the fourth day was taken up by the reading of reports from the various committees appointed at this and the previous meeting. The details of these are of no particular interest to our readers.

Prof. B. Laillard read an article on Homœpathic Pharmacy, which was referred for publication.

Mr. S. S. Garrigues, of East Saginaw, Mich., read a paper in answer to Query 11—"The statistics of American Bromine production." He said that about 130,000 pounds were annually manufactured, and still more could be thrown on the market if necessary. The yield of bromine is about one pound from thirteen bushels of salt. It is obtained almost exclusively in the Ohio and Kanawha Valleys, the mines at East Saginaw not being sufficiently impregnated with bromine compounds to work them profitably.

Prof. Wm. Proctor, jr., then read a reply to Querry 30—What shall I read, and where shall I begin? It is impossible to reproduce all the excellent hints in this valuable paper, but for the benefit of our young friends we shall endeavor to reproduce the paper in full, as soon as it is published.

Query 31. An essay on what are Poisons in Pharmacy, and what plan is most efficient in guarding them from improper use *in the shop*. To this query C. L. Eberle responded, giving his views upon poisonous articles, and added that there was no safeguard equal to *intelligent brains*. "Let the dispenser educate himself to

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practice a cool deportment, and let each detail in his manipulation be governed by close thought and scrupulous care." This advice covers the whole ground of properly guarding against *accidents* which ought *not* to occur.

William Saunders, of London, Ontario, then read a paper on the "Insect Enemies of Drugs," in reply to a query; and afterward a volunteer paper on the habits of the Mexican Honey Ant. This ant produces in its abdomen an excellent article of honey which is used both for food and medicine. Both papers were accompanied with specimens of the animals alluded to.

Dr. E. R. Squibb then read a paper on a Universal Laboratory Stand, adapted to many of the wants of the Pharmacist, and presented to the Association all the necessary wood-blocks to illustrate the papers he should present at this meeting. In connection with the apparatus alluded to, he also had an upright condenser used in distilation, it being a very ingenious modification of the old style of Liebig's condenser, occupying much less room, and having much greater condensing capacity.

Ergot and its preparations was the subject of still another volunteer paper by Dr. E. R. Squibb. In this the writer reviewed first the character of the ergot now found in market, stating that it was largely composed of other ergotized substances, such as grasses, barley, wheat, etc. He alluded to the Fluid Extract of the present U. S. P. as being a very great mistake, as it would not produce such a reliable preparation as that made by the formula of the U. S. P. of 1860. Dr. Squibb spoke of its recent administration hypodermically, and stated that he has prepared for that purpose a Solid Extract of such strength that one grain represents six minims of Fluid Extract, and that it has met with great success.

Mr. H. J. Rose of Toronto forwarded a reply to Query 42—"What is the purity of commercial Tartaric Acid, and what is the normal per centage of moisture?" He stated that he had tried the acid of all the various manufacturers here, as also procured through London brokers, and found it free from impurities to any appreciable degree. In one sample a trace of lead was found. It would appear that the crystals were about 2 per cent. stronger than the powder. The total amount of water present varies from 11 to 12 per cent., but when the acid is dried over sulphuric acid it only loses about 1 per cent. of water. Mr. Remington spoke of having on some occasions found traces of sulphuric acid present.

Mr. J. L. Lemberger presented a reply to Query 37—"Should not Aromatic Powder (U. S. P.) be made by powdering the crude ingredients all together, to facilitate pulverization?" which reply was that it should, as the cinnamon and ginger greatly hastened the labor by absorbing the oleaginous matter of the cardamon and nutmeg.

Dr. E. P. Nichols took the chair while Mr. J. F. Hancock read

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the report of the committee upon Elixirs and unofficinal formula. This report, which was quite lengthy and of great interest, gave formulæ for all the really valuable Elixirs, and was accompanied by samples of each.

The Report was accepted and the Committee discharged, and the following Resolution adopted:—*Resolved*, that this report be adopted with the recommendation that these formulas be used by the members of the Association, and that the Secretary be instructed to send a printed copy to the Medical Societies of the Union, with the suggestion that physicians in prescribing elixirs prescribe only those of which formulas have been adopted by this Association.

On Friday, the fifth day a number of volunteer papers were read, some of them only by title, as the time for adjournment was at hand.

The Committee on Queries then read a list of the Queries accepted for the coming year, and their report was accepted and adopted.

The following resolution, offered by the Business Committee, was unanimously adopted:

"*Resolved*, That the hearty thanks of this Association be and are hereby tendered to the pharmaceutists and citizens of Richmond, for the cordiality of our reception at this our first visit to the 'Sunny South.'"

At 12.30 P. M. the Association adjourned, to meet at Louisville, Kentucky, on the second Tuesday in September, 1874.

Practical Formulæ

Superior Whitewash.—Take a clean, water-tight barrel, or other suitable cask, and put in it half a bushel of lime. Slake it by pouring water over it, boiling hot, and in sufficient quantity to cover it five inches deep, and stir it briskly till thoroughly slaked. When the slaking has been effected, dissolve it in water, and add a solution of two pounds of sulphate of zinc, and one of common salt. As it is often desirable to vary the monotony by introducing a variety of colors upon the premises, it may be important to know that a beautiful cream color may be communicated to the above wash by adding to it three pounds of yellow ochre; or a good pearl or lead color by the addition of lamp, vine, or ivory black. For fawn color, add four pounds umber—Turkish or American (the latter is the cheapest), one pound Indian red, and one pound lamp-black. For common stone color, add four pounds raw umber, and two pounds

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lamp-black. The value of the sulphate of zinc is that it makes the wash harden better after it is put on. Some also put in a half pound of common alum; others substitute the alum for the zinc. There is no mode of making farm buildings attractive so cheaply as with whitewash, and, at the same time, of adding greatly to the preservation of the wood. The above wash cannot cost over fifty cents, and if liberally used it will add five hundred dollars to the market value of a farm. We can conceive of but few things more beautiful than clean, white farm buildings and fences, in contrast with the rich green of budding spring.

Indelible Ink.—The *Chemist and Druggist* gives the following recipe, which is said to afford a marking ink which flows freely from the pen, without running or blotting, becoming perfectly black on the application of a very moderate heat, and not injuring the finest fabric:—

Argenti nitras.....one ounce.
Soda carb. cryst.....one and a-half ounces.
Acid, tartaric .....two drachms, two scruples
Liq. ammon. fort ... .two fluid ounces or q.s.
Archil .....half an ounce.
Sacchar. alb .....half an ounce.
Pulv. acacia .....one and a-quarter ounces.
Aqua destil .....a sufficient quantity.

Dissolve the nitrate of silver and carbonate of soda separately in distilled water; mix the solutions; collect and wash the precipitate on a filter; introduce the precipitate, still moist, into a Wedgwood mortar, and add to it the tartaric acid, rubbing them together until effervescence has ceased; add liquor ammoniæ in sufficient quantity to dissolve the tartrate of silver; then mix in the archil, white sugar, and powdered gum arabic, and add as much distilled water, if required, as will make six fluid ounces of the mixture.

Elixir Stoughtonii (Stoughton's Bitters).—

Take of Wormwood,
Orange Peel,
Gentian; of each, 5 parts.
Rhubarb, 2 parts.
Cascarilla,
Aloes; of each one part.
Alcohol diluted, 200 parts.

Make either by maceration or percolation. This is one of the numerous stomach bitters of the 16th century, and a Professor Stoughton, of Leyden, is said to have been the originator of this elixir of life? The compound tincture of gentian is a good substitute, and generally dispensed when the Stoughton elixir is not kept in stock.—*Ibid.*

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Liquid Furniture Polish :—

Shellac	4 ounces.
Alcohol, 95 p. c	2 pints.
Linseed oil	2 pints.
Spirits of turpentine	1 pint.
Sulphuric ether	4 ounces.
Ammonia	4 ounces.

Dissolve the shellac in the alcohol, add the oil and the turpentine, mix well, and add the ether and the ammonia. Shake when used, and apply lightly with a sponge.—*Druggists' Circular.*

How to Deodorize Cocoanut Oil.—The unpleasant smell often found in cocoanut oil is simply due to the extreme facility with which the oil becomes rancid. This may be corrected by any of the processes used for treating other oils similarly affected. The following, originally recommended for castor oil, seems to be as good as any other method: To one pound of the oil add half an ounce of boneblack and two drachms of calcined magnesia; mix well and let stand in a warm place, with occasional agitation, for three days. Allow to settle down or filter through a funnel provided with a double jacket holding hot water. During the maceration, the oil must be kept warm enough to remain in the liquid state.—*Ibid.*

Registrar's Notices.

LIST OF CHEMISTS WHO HAVE RENEWED THEIR REGISTRATION DURING THE PAST MONTH.

Caulfield, Chas., St. Thomas.	McCartney, W. J., Thorold.
Chapman, N., Warkworth.	McCollum, W. A., Tilsonburg.
Featherston, J., Ottawa.	McIntyre, P. J., Arnprior.
Foster, R. A., Picton.	McKnight, Robt., Meaford.
Grange, A. W., Napanee.	Oliver, W. H., London.
Grange, J. T., Napanee.	Parish, T. A., Bridgetown.
Gray, R. B., Pembroke.	Priest, T. H., Bath.
Hurden, W. H., Kincardine.	Radley, S. D., Chatham.
Hoag, H. N., Thamesville.	Smith, R. J., Bridgetown.
Leadbeater, J., Springfield.	Stark, W. G., Hamilton.
Lewis, R. L., Hull, Q.	Templeton, Robt., Perth.

The name of W. J. Johnson, Farmersville, was entered by mistake last month.

NEW REGISTRATIONS,

Rounds, Cicero D., Drumbo.	Shuff, J. G., London.

ASSOCIATES.

Smith, W. G., Toronto.	Smith, J. T., Dunnville.

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DRUGS, MEDICINES, &c.	$ c.		$ c.
Acid, Acetic, fort	0 14	@	0 15
Benzoic, pure	0 23		0 30
Citric	1 50		1 60
Muriatic	0 05		0 06
Nitric	0 11½		0 15
Oxalic	0 23		0 27
Sulphuric	0 03¾		0 07
Tartaric, pulv	0 50		0 50
Ammon, carb. casks	0 23		0 24
" jars	0 23		0 24
Liquor, 880	0 25		0 28
Muriate	0 14		0 15
Nitrate	0 45		0 60
Æther, Acetic	0 45		0 50
Nitrous	0 35		0 37
Sulphuric	0 50		0 50
Antim. Crude, pulv	0 13		0 17
Tart "	0 65		0 70
Alcohol, 95 per ct.....Cash	1 60		1 72
Arrowroot, Jamaica	0 16		0 22
Bermuda	0 50		0 65
Alum	0 02¾		0 03½
Balsam, Canada	0 50		0 50
Copaiba	0 90		0 95
Peru	3 80		4 00
Tolu	0 90		1 00
Bark, Bayberry, pulv	0 20		0 22
Canella	0 17		0 20
Peruvian, yel. pulv	0 42		0 50
" red "	2 10		2 20
Slippery Elm, g. b	0 15		0 20
" flour, packets	0 28		0 32
Sassafras	0 15		0 20
Berries, Cubebs, ground	0 20		0 25
Juniper	0 06		0 10
Beans, Tonquin	0 62		1 10
Vanilla	28 00		28 00
Bismuth, Alb	3 40		4 00
Carb.	3 65		4 00
Camphor, Crude	0 38		0 40
Refined	0 45		0 50
Cantharides	2 80		3 00
Powdered	2 85		3 10
Charcoal, Animal	0 04		0 06
Wood, powdered	0 10		0 15
Chiretta	0 20		0 30
Chloroform	1 10		1 65
Cochineal, S. G	0 80		0 95
Black	1 10		1 20
Colocynth, pulv	0 50		0 60
Collodion	0 90		1 00
Elaterium.....oz	5 80		5 90
Ergot	0 50		0 60
Extract Belladonna	2 00		2 25
Colocynth, Co	1 25		1 75
Gentian	0 50		0 60
Hemlock, Ang	0 85		0 95
Henbane, "	2 10		2 40
Jalap	5 00		5 50
Mandrake	1 75		2 00
Nux Vomic.....oz	0 40		0 50
Opium.....oz	1 50		
Rhubarb	5 00		5 50
Sarsap. Hon. Co	1 00		1 20
" Jam. Co	4 00		4 50
Taraxacum, Ang	0 70		0 80
Flowers, Arnica	0 17		0 25
Chamomile	0 32		0 40
Gum, Aloes, Barb. extra	0 70		0 80
" " good	0 40		0 50
" Cape	0 16		0 20
" " powdered	0 20		0 30
Socot	0 50		1 35
" " pulv	1 00		0 00
Arabic, White	0 70		0 75
" powdered	0 60		0 75
" sorts	0 28		0 30
" " powdered	0 42		0 50
" com. Gedda	0 13		0 16
Assafœtida	0 40		0 42
British or Dextrine	0 13		0 15
Benzoin	0 35		0 75
Catechu	0 12		0 15
" powdered	0 25		0 30
Euphorb, pulv	0 35		0 40
Gamboge	1 40		1 50
Guaiacum	0 90		1 00
Myrrh	0 50		0 70

DRUGS, MEDICINES, &c.—*Contd.*	$ c.		$ c.
Sang Dracon	0 60		0 70
Scammony, powdered	6 00		6 50
" Virg. "	14 50		—
Shellac, Orange	0 65		0 70
Gum, Shellac, liver	0 60		0 65
Storax	0 40		0 45
Tragacanth, flake	1 10		1 40
" common	0 53		0 65
Galls	0 28		0 32
Gelatine, Cox's 6d	1 15		1 20
Glycerine, common	0 25		0 30
Vienna	0 25		0 30
Prices	0 60		0 75
Honey, Canada, best	0 15		0 17
Lower Canada	0 14		0 16
Iron, Carb. Precip	0 20		0 25
" Sacchar	0 40		0 55
Citrate Ammon	1 50		1 50
" & Quinine, oz	0 53		0 58
" & Strychine	0 17		0 25
Sulphate, pure	0 08		0 10
Iodine, good	7 50		8 00
Resublimed	8 50		9 00
Jalapin	1 25		1 50
Kreosote	2 40		2 50
Leaves, Buchu	0 22		0 30
Foxglove	0 25		0 30
Henbane	0 35		0 40
Senna, Alex	0 27		0 60
" E. I.	0 14		0 20
" Tinnevilly	0 20		0 30
Uva Ursi	0 15		0 17
Lime, Carbolate.....brl	5 50		—
Chloride	0 06		0 07
Sulphate	0 08		0 12½
Lead, Acetate	0 15		0 16
Leptandrin.....oz.	0 60		—
Liq. Bismuth	0 50		0 75
Lye, Concentrated	1 75		2 00
Liquorice, Solazzi	0 50		0 55
Cassano	0 23		0 40
Other brands	0 14		0 25
Liquorice, Refined	0 35		0 45
Magnesia, Carb. 1 oz.	0 20		0 25
" 4 oz.	0 17		0 20
Calcined	0 65		0 75
Citrate.....gran.	0 63		0 75
Mercury	1 60		1 65
Bichlor	1 40		1 45
Chloride	1 55		1 60
C. Chalk	0 70		—
Nit. Oxyd	1 70		1 75
Morphia Acet	4 45		4 60
Mur.	4 45		4 60
Sulph	4 60		4 75
Musk, pure grain.....oz	23 00		—
Canton	0 90		1 20
Oil, Amonds, sweet	0 42		0 50
" bitter	14 00		15 00
Aniseed	4 00		4 25
Bergamot, super	6 25		6 50
Caraway	3 20		3 50
Cassia	2 80		2 90
Castor, E. I	0 14		0 15
Crystal	0 22		0 25
Italian	0 26		0 28
Citronella	1 25		1 35
Cloves, Ang	2 20		2 40
Cod Liver	1 45		1 50
Croton	1 75		2 00
Juniper Wood	0 80		1 00
Berries	6 00		7 00
Lavand, Ang.....oz.	0 90		1 00
Exotic	1 40		1 60
Lemon, super	5 00		5 50
ord	3 20		3 40
Orange	4 00		4 25
Origanum	0 65		0 75
Peppermint Ang	13 00		14 40
" Amer	3 80		4 00
Rose, Virgin	8 50		8 75
" good	6 80		7 00
Sassafras	0 90		1 00
Wintergreen	6 00		6 50
Wormwood, pure	4 00		6 50
Ointment, blue	0 90		1 00
Opium, Turkey	8 50		8 75
pulv	10 50		10 75

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DRUGS, MEDICINES, &c.—*Cont'd*	$ c.	$ c
Orange Peel, opt.	0 30	0 36
" good	0 12½	0 20
Pill, Blue, Mass	1 00	1 00
Potash, Bi.chrom	0 23	0 27
Bi-tart	0 33	0 35
Carbonate	0 14	0 20
Chlorate	0 55	0 60
Nitrate	10 50	11 00
Potassium, Bromide	1 10	1 25
Cyanide	0 75	0 80
Iodide	6 75	7 00
Sulphuret	0 25	0 35
Pepsin, Boudault's...oz	1 40	—
Houghton's..... doz.	8 00	9 00
Morson's.....oz.	0 85	1 10
Phosphorus	0 95	1 00
Podophyllin	0 50	0 60
Quinine, Pelletier's	—	2 45
Howard's	2 50	—
" 100 oz. case.	2 45	—
" 25 oz. tin..	2 45	—
Root, Colombo	0 13	0 20
Curcuma, grd	0 12½	0 17
Dandelion	0 17	0 20
Elecampane	0 16	0 17
Gentian	0 08	0 10
" pulv	0 15	0 20
Hellebore, pulv	0 17	0 20
Ipecac, "	1 50	1 60
Jalap, Vera Cruz	1 00	1 25
" Tampico	0 70	1 00
Liquorice, select	0 12	0 13
" powdered	0 15	0 20
Mandrake "	0 20	0 25
Orris, "	0 20	0 25
Rhubarb, Turkey	2 50	2 75
" E. I	1 10	1 20
" " pulv	1 20	1 30
" " 2nd	0 90	1 00
" French	0 75	—
Sarsap., Hond	0 40	0 45
" Jam	0 88	0 90
Squills	0 10	0 15½
Senega	1 00	1 10
Spigelia	0 25	0 30
Sal., Epsom	2 25	3 00
Rochelle	0 32	0 35
Soda	0 02½	0 03
Seed, Anise	0 13	0 16
Canary	0 05	0 06
Cardamon	2 25	2 50
Fe ugreek, g'd	0 09	0 10
Hemp	0 06½	—
Mustard, white	0 14	0 16
Saffron, American	1 15	1 50
Spanish	12 00	13 00
Santonine	8 25	9 00
Sago	0 08	0 09
Silver, Nitrate.....Cash	14 85	16 50
Soap Castile, mottled	0 11	0 14
Soda Ash	0 04	0 05
Bicarb. Newcastle	—	6 50
" Howard's	0 14	0 16
Caustic	0 06½	0 06½
Spirits Ammon., arom	0 35	0 35
Strychnine, Crystals	2 60	2 70
Sulphur. Precip	0 10	0 12½
Sublimed	0 03½	0 05
Roll	0 03	0 04½
Vinegar, Wine, pure	0 55	0 60
Verdigris	0 35	0 40
Wax, White, pure	0 75	0 80
Zinc. Chloride.....oz	0 10	0 15
Sulphate, pure	0 10	0 15
" common	0 06	0 10
DYESTUFFS.		
Annatto	0 35 @	0 60
Aniline, Magenta, cryst	2 50	2 80
liquid	2 00	—
Argols, ground	0 15	0 25
Blue Vitrol, pure	0 10	0 10
Camwood	0 06	0 09
Copperas, Green	0 01½	0 02½
Cudbear	0 16	0 25
Fustic, Cuban	0 02½	0 04
Indigo, Bengal	2 40	2 50
Madras	0 90	0 95
Extract	0 30	0 35

DYESTUFFS—*Continued.*		
Japonica	0 07½	0 07⅝
Lacdye, powdered	0 33	0 38
Logwood	0 02	0 03
Logwood, Camp	0 02	0 3½
Extract	0 10	0 14
" 1 lb. bxs	0 13	—
" ½ lb. "	0 14	—
Madder, best Dutch	0 13	0 15
2nd quality	0 12	0 14
Quercitron	0 03	0 05
Sumac	0 06	0 08
Tin, Muriate	0 10½	0 12½
Redwood	0 05	0 06
SPICES.		
Allspice	0 11½ @	0 12
Cassia	0 39	0 40
Cloves	0 30	0 32
Cayenne	0 30	0 35
Ginger, E. I	0 19	0 20
Jam	0 20	0 30
Mace	1 65	1 75
Mustard, com	0 20	0 25
Nutmegs	1 15	1 20
Pepper, Black	0 22½	0 23
White	0 48	0 50
PAINTS, DRY.		
Black, Lamp, com	0 07 @	0 08
" refined	0 25	0 30
Blue, Celestial	0 08	0 12
Prussian	0 65	0 75
Brown, Vandyke	0 10	0 12½
Chalk, White	0 01	0 01½
Green, Brunswick	0 07	0 10
Chrome	0 16	0 25
Paris	0 30	0 35
Magnesia	0 20	0 25
Litharge	0 07	0 09
Pink, Rose	0 12½	0 15
Red Lead	0 07½	0 08
Venetian	0 02½	0 03½
Sienna, B. & G	0 07	0 08
Umber	0 07	0 10
Vermillion, English	1 50	1 60
American	0 25	0 35
Whiting	0 85	0 90
White Lead, dry, gen	0 08½	0 09
" " No. 1	0 07	0 08
" " No. 2	0 05	0 07
Yellow Chrome	0 12½	0 35
" Ochre	0 02½	0 03½
Zinc White, Star	0 10	0 12
COLORS, IN OIL.		
Blue Paint	0 12 @	0 15
Fire Proof Paint	0 06	0 08
Green, Paris	0 30	0 37½
Red, Venetian	0 07	0 10
Patent Dryers, 1 lb tins	0 11	0 12
Putty	0 03⅜	0 04½
Yellow Ochre	0 08	0 12
White Lead, gen. 25 lb. tins	2 50	—
" No. 1	2 25	—
" No. 2	2 00	—
" No. 3	1 75	—
" com	1 30	—
White Zinc, Snow	2 75	3 25
NAVAL STORES.		
Black Pitch	5 00 @	5 25
Rosin, Strained	4 50	—
Clear, pale	7 80	—
Spirits Turpentine	0 58	0 60
Tar Wood	5 50	5 75
OILS.		
Cod	0 63 @	0 70
Lard, extra	0 90	—
No. 1	0 80	0 85
No. 2	0 75	0 90
Linseed, Raw	0 76	0 80
Boiled	0 81	0 85
Olive, Common	1 10	1 20
Salad	1 80	2 30
" Pints, cases	4 20	4 40
" Quarts	3 25	3 50
Seal Oil, Pale	0 75	0 80
Straw	0 68	0 75
Sesame Salad	1 30	1 35
Sperm, genuine	2 20	2 40
Whale refined	0 90	0 95

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CANADIAN

PHARMACEUTICAL JOURNAL

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ON VARIOUS METHODS FOR THE PREPARATION OF BINIODIDE OF MERCURY.

BY E. B. SHUTTLEWORTH.

In devising or selecting a formula for the preparation of any compound there are three considerations which are essential to a correct and satisfactory conclusion. These are, that the contemplated product be obtained (*a*) of the best quality; (*b*) at the lowest cost; (*c*) with the least trouble. As a general rule, the relative importance of these conditions is indicated by the order in which they are given; quality is, or should be, the great essential, while cost and convenience are of secondary consequence. Too often, however, this order is reversed, and all considerations are made subordinate to that of cost; but, in no case, can this be justifiable; it is only when the matter of quality is satisfactorily settled that we are at liberty to decide in favor of that process which promises to be the most economical. The question of economy is, however, to the pharmacist, a most important one, and in cases of scarcity of material, or high prices, merits his best attention.

A case in point is that of the red iodide of mercury—a compound which is almost invariably prepared by the pharmacist. The

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recent inflation in the price of iodide of potassium, and the high figure which it at present maintains, demand the utmost economy in its use. In view of this it may be opportune to review the various processes which have been devised for the preparation of the biniodide of mercury, so that we may be able to obtain the best results with the least possible expenditure of materials.

The first process which might be noticed is that in which the biniodide is formed by a direct union of the elements composing it. Mercury and iodide are triturated, or agitated together, a little alcohol being added to control the reaction. In inexperienced hands this process yields an imperfect product; is exceedingly wasteful and troublesome, and may be so dismissed.

A better process is that of the *British Pharmacopœia*, 4 parts of perchloride of mercury, dissolved in 60 parts of boiling water, are mixed with 5 parts of iodide of potassium, in 20 parts of boiling water. The iodide is, theoretically and practically, one-tenth of one part in excess of that actually required for the decomposition. Its object is to prevent contamination of the product with the mercuric salt. This excess appears useless, first, because, with any ordinary care, the operator can ascertain the moment the decomposition is complete; and again if any slight excess of mercuric salt happened to be present it would certainly be removed in the subsequent copious washings to which the biniodide is subjected. This excess is not only wasteful as far as the iodide of potassium is concerned, but of the biniodide also, as the latter salt is soluble in the former. The use of boiling water is unnecessary, as the quantity ordered would, if cold, dissolve the salts readily. The precipitate from a hot solution is more granular than that from one which is cold, and for the preparation of ointments, it will be conceded that the finer and softer salt is to be preferred.

In the process of the *U. S. Pharmacopœia*, the excess of iodide is the same as that of the *B. P.*, but cold water is employed for solution.

The most satisfactory and economical results I have obtained from the decomposition of the salts alluded to, have been by employing 4 parts of the mercuric salt, in powder, dissolved in 64 parts of cold water, adding a sufficient quantity of solution of iodide of potassum, (4·9 parts in 10 parts of water). The yield will be 6·7 parts, of a salt sufficiently dry to be pulverulent. This

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is very little short of the theoretical yield; 271 parts $HgCl_2$ require for decomposition 332 parts KI, and should produce 454 parts (6·701) HgI_2.

Another method which may be easily and economically pursued is that in which iodide of iron is used instead of iodide of potassium. The relative prices of iodine and iodide of potassium are generally as 21 to 19, and 254 parts iodine are equal to 332 of iodide of potassium. If, therefore, we mix 3·75 parts of iodine with 4 parts of cold water and sufficient iron wire to saturate, allowing the mixture to stand for several hours, heating towards the close of the reaction, we shall obtain a solution of iodide of iron equivalent in iodine strength to the quantity of iodide of potassium required to decompose 4 parts of perchloride of mercury. The yield will be about 6·7 parts, and the quality of the product is equal to that produced in any other way, but the precautions of using the iron solution as soon as possible, and of washing the precipitate as soon as deposited, must be observed; otherwise the product might be contaminated with a basic ferric chloride, which in time, is thrown down. It will be seen that this method is as economical as could well be devised; the operator getting the profits of the manufacturer of iodide of potassium, minus the labor of the former in making the iodide of iron.

The last process which we shall notice is that devised by Mr. Williams, described in the *Chicago Pharmacist*, and also published in this Journal (Vol. vii., No. 1). In this, the use of a large quantity of water, for the solution of the mercuric salt, is obviated by employing a concentrated solution of chloride of ammonium, in which the mercuric salt dissolves readily. Four parts of perchloride of mercury are dissolved in four parts of water to which 2 parts of chloride of ammonium have been added, 5 parts of iodide of potassium are dissolved in 5 parts of water, and the solutions are mixed. It will be seen that, in this way, 9 parts of water suffice for solution, while, otherwise, at least 70 would be required. This is a great convenience, especially when large quantities are operated upon; but, according to trials which I have made, the method is not economical, on account of the biniodide being soluble in the solution of chloride of ammonium. By draining the newly formed salt, as soon as deposited, the loss may be rendered smaller than if water were at once added to the mixture; but the product will not exceed 6·150

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parts, against 6·701, the theoretical yield, or 6·700 the yield by the method with simple water. In large operations, some of this dissolved biniodide may be recovered by evaporating to dryness the drainings and first washings, washing away the deposited chloride of ammonium, and thus leaving the more insoluble biniodide. The operation must be performed quickly or the biniodide will also dissolve. Williams' method cannot be recommended except where expedition and convenience are paramount considerations to that of cost. The product is of a darker color, and more granular than by other methods, and somewhat resembles that prepared by the old Edinburgh process, in which the compound formed by a direct union of mercury and iodine is dissolved and crystallized from a solution of chloride of sodium.

A word in regard to Williams' method for purifying the green iodide of mercury. I have lately tried this plan and found it to work very satisfactorily, being equally efficient, quite as convenient, more expeditious, and much more economical than the process with alcohol. The washing may be best performed by repeated agitation and decantation, using fresh solution of chloride of sodium.

ADULTERATION OF TARTARIC ACID.

BY H. MACLAGAN.

In the account of the proceedings of the Am. Pharm. Association, in the November number of the JOURNAL, I noticed a reference to the presence of sulphuric acid in commercial tartaric acid. That it is sometimes present, and in considerable quantity, I can fully attest, having once suffered considerable annoyance therefrom. Complaint was made by a customer of our seidlitz powders—that there was something wrong with them, as a quantity of white powder remained in the tumbler after drinking. I found, on mixing one, that such was indeed the case—that when the effervescence was about ended, the mixture became cloudy, and in a very short time a considerable white deposit had accumulated in the bottom of the glass. This was collected and examined, and proved to be bitartrate of potassa. Suspecting the tartaric acid, I examined it, and found it to contain sulphuric acid, which sufficiently explained the

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mystery. The sulphuric acid decomposed the rochelle salt, producing cream of tartar and sulphate of soda, thus :—

$2K\,Na\,C_4\,H_4\,O_6 + H_2\,SO_4 = 2K\,H\,C_4\,H_4\,O_6 + Na_2\,So_4$. This makes a considerable difference in the character of the medicine. The patient, instead of taking Rochelle salt and neutral tartrate of soda, is swallowing a mixture of cream of tartar and glauber salt, which, in some cases, might not be desirable.

I did not estimate the percentage of impurity present, but, to judge from the quantity of bitartrate produced, it must have been very considerable.

Lindsay, Ont.

REPORT OF THE PURITY OF COMMERCIAL SPECIMENS OF OFFICINAL ACIDS.*

BY LOUIS SIEBOLD.

The title of this paper shows that I wish to deal, not with the crude acids of commerce, but with those products which are sold *as pure* for dispensing and analytical purposes. That these so-called pure acids are in many cases far from pure is a fact well known to every chemist who takes the trouble of testing the chemicals supplied to him. To dwell upon the impurities contained in such acids, the means of detecting and removing the same, and the best methods of preparing acids of perfect purity, is the object of this paper.

Hydrochloric Acid.—If this acid is prepared in strict accordance with the pharmacopœia process, and from perfectly pure materials, it will always be obtained free from sulphuric acid, sulphurous acid, arsenic, iron, and free chlorine, which are the main impurities found in the commercial article. If the sulphuric acid used contains arsenic, the hydrochloric acid made from it will, of course, contain the same impurity; if oxides of nitrogen are present in the former, free chlorine will inevitably occur in the latter, whilst organic matter either in the $H_2\,SO_4$ or in the NaCl generally cause the formation of a little sulphurous acid. I need hardly remind you that free chlorine and sulphurous acid destroy one another, and that for this reason they can never occur together. There appears to be hardly any difficulty in obtaining from wholesale dealers and manufacturers, hydrochloric acid quite free from sulph-

* Read at the Meeting of the British Pharmaceutical Conference, and published in the Pharm. Jour. and Trans.

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uric acid, from sulphurous acid, and also from appreciable quantities of iron (very small traces of iron can be detected in nearly every sample), but arsenic and free chlorine are very frequently found in acids sold as pure; and as arsenic is undoubtedly a most objectionable impurity, however small its quantity may be, it should be carefully searched for, and if found, the acid containing it should be rejected as unfit for dispensing, and even more so for analytical operations, where its use might lead to very serious mistakes. Boiling a little of the acid with a piece of *pure* copper foil is a very convenient test, and is therefore generally resorted to, but it is not delicate enough for the detection of very small traces of arsenic. I have often been unable to detect it in hydrochloric acid by the copper test, when a careful examination with sulphretted hydrogen proved its presence most unmistakably.

It does not, however, suffice to add a solution of H_2S, but the gas must be conducted through the acid until the latter is comcompletely saturated with it. After twelve hours' standing, the precipitate, which will, in any case, be formed, must be filtered, washed, dried, and fused with carbonate and nitrate of sodium; the fused mass dissolved in water, filtered, mixed with pure nitric acid in excess, boiled, and then tested with ammonia and nitrate of silver, or with sulphuretted hydrogen. It is impossible to judge of the absence of arsenic from the light color of the precipitate. By the method just described, arsenic will be found in many samples of hydrochloric acid which, if tested according to the directions of the pharmacopœia, would seem to be quite pure.

Sulphurous acid is readily detected by the pharmacopœia test, or by iodized starch, the color of which would be destroyed by the least trace of H_2SO_3. For detecting free chlorine, solution of indigo appears to me preferable to a mixture of iodide of potassium and starch, as the formation of blue iodide of starch might be caused by perchloride of iron, which is often present in hydrochloric acid, and which might thus be mistaken for chlorine.

On the strength of numerous experiments which I have made, I can recommend the two following methods as the best for preparing perfectly pure hydrochloric acid from the crude commercial article. The first of the two methods yields an acid of low specific gravity (1·120 to 1·125), which, though very suitable for analytical purposes, does not come up to the pharmacopœia standard of strength. By the second method, which was proposed by A. Bettendorff about two years ago, and which I cannot recommend too strongly, a pure acid of 1·16 sp. gr. can be produced with very little trouble indeed.

1st. method.—Dilute the crude acid with sufficient water to reduce the specific gravity to about 1·12; saturate it with sulphuretted hydrogen gas, allow to stand for fully twelve hours, decant

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the clear liquid from the precipitate, drive off the sulphuretted hydrogen by heat, and distil, after adding a little chloride of sodium.

The sulphuretted hydrogen removes not only the arsenic, but likewise the free chlorine or the sulphurous acid, whichever of the two may be present.

2nd method.—Mix the crude acid, whose specific gravity should be between 1·16 and 1·18 (not lower than 1·16), with a small quantity of a solution of stannous chloride in hydrochloric acid of the ssme strength, and allow to stand for twenty-four hours. Any arsenic present will thus be precipitated in the shape of a brown powder (which consists of metallic arsenic with a variable amount of tin). Sulphurous acid, if present, produces a precipitate of stannous sulphide, and is therefore removed along with the arsenic. The filtered acid now only requires to be distilled from a little chloride of sodium, as in the previous process. But as hydrochloric acid of so high a specific gravity parts with a great deal of hydrochloric acid gas on boiling, it is necessary to place a little water into the receiver for its absorption. This method also removes free chlorine if present.

About four years ago a new method of making pure hydrochloric acid from the commercial was published by A. W. Hofmann. According to this, one volume of crude hydrochloric acid is to be mixed gradually with $3\frac{1}{2}$ volumes of strong sulphuric acid in a tubulated retort, and the HCl gas disengaged by the heat produced by the addition of each successive quantity of H_2SO_4 is to be conducted through distilled water in the usual way. Fresenius has proved this method to be quite useless, as neither arsenic nor chlorine can be removed by the same.

In reference to the above method of purifying with stannous chloride, I wish to add that I only recommend it for removing, but not so much for detecting arsenic, as the presence of H_2SO_3 in the hydrochloric acid might lead an inexperienced worker into errors.

Sulphuric Acid.—The chief impurities for which this substance must be tested before it should be used for medicinal or analytical purposes are arsenic, lead, and oxides of nitrogen. Arsenic is best detected by Marsh's test, lead by sulphuretted hydrogen, and oxides of nitrogen by ferrous sulphate. An acid free from arsenic and nitrogen oxides, but containing lead, calcium, iron, etc., may be easily purified by distillation, but if the first-named impurities are present mere distillation will not suffice. In that case it is necessary to mix one volume of the acid with six or seven volumes of water, and to saturate the mixture with H_2S. After forty-eight hours the clear acid is decanted from the precipitated sulphides of lead and arsenic, evaporated in a retort until fumes of H_2SO_4 escape, and then distilled. What passes over first is too weak, and is rejected until an acid of 1·84 sp. gr. distils, when the receiver is changed. To assure a quiet boiling of the acid, and thus to pre-

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vent the cracking of the retort, it is extremely useful to conduct a slow current of air, by means of an aspirator, through the acid during distillation. Though sulphuric acid purchased as pure from the most respectable houses is sometimes found to contain impurities, this is by no means the case to the same extent as it is with hydrochloric acid, which it is almost impossible to purchase in a state of absolute purity, whilst there is not much difficulty in obtaining a supply of perfectly pure sulphuric acid.

Nitric Acid.—This preparation can be obtained in a state of the utmost attainable purity by distilling commercial acid of 1·42 sp. gr., and of good quality, with a little absolutely pure nitrate of potassium, from a glass retort. What passes over first must be rejected, until an acid distils, which, if diluted with water, forms a perfectly clear mixture with solution of nitrate of silver, remaining clear, too, after standing for ten minutes. Not less than two drachms of the acid should be subjected to this test. When thus quite free from every trace of HCl, the receiver is changed, and the distillation carried on until only about one-eighth of the original bulk remains in the retort. If carried on still further the purity of the product would be endangered, as traces of sulphuric acid might pass over with the nitric. Another method of purifying nitric acid consists in removing the HCl by the addition of solution of nitrate of silver to the somewhat diluted acid, decanting from the precipitate and distilling the clear acid with a little perfectly pure nitrate of potassium, until about seven-eighths have passed over. The method is good, but is only applicable for preparing an acid of low specific gravity (1·25).

The first method, I feel sure, is the best of all that can be recommended for preparing pure nitric acid of the pharmacopœia strength. and as it presents no difficulties whatever, it is, I believe, the one generally applied. The fact, therefore, that it is almost impossible to obtain perfectly pure nitric acid by purchase, seems all the more surprising. It is easy enough to get it free from solid impurities, as mere distillation is sure to remove to these; nor is there any great difficulty in procuring it free from HCl, but H_2SO_4 is always present, no matter from whom it has been obtained. Many samples of nitric acid sold as perfectly pure may be quite good enough for medicinal use, but the trace of H_2SO_4 present is always a source of annoyance in medical laboratories, where the acid is required for accurate scientific investigations. Whoever requires this preparation absolutelv free from H_2SO_4 is obliged to make it for his own use. To detect very small quantities of this impurity in nitric acid, the application of the pharmacopœia test, consisting in the addition of a solution of barium chloride to the diluted acid, is altogether insufficient. About four ounces of the acid to be tested must be evaporated on a water bath until a few drops only are left; the residue is then mixed with a little distilled

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water and a few drops of solution of chloride of barium. A precipitate will thus be obtained from any commercial specimen of pure acid. If nitric acid containing small traces of H_2SO_4 which do not show on the mere addition of a solution of $BaCl_2$, is neutralized or nearly neutralized with pure carbonate of sodium (quite free from sulphate), the mixture will then turn cloudy on the addition of a solution of a barium salt. It is on this account that the presence of even very small traces of H_2SO_4 is often very annoying to the analyst. The reason that manufacturers do not succeed in producing nitric acid of perfect purity by the method described, is that they do not reject enough of the acid passing over at the beginning, and that they carry on the distillation too far towards the end, and, finally, that they use impure nitrate of potassium. Howard's pure nitrate of potassium, generally considered as a very pure preparation, still contains appreciable quantities of chloride, which must be removed by recrystallization (stirring the solution well during crystallization, so as to prevent the formation of large crystals) before it can be used for the manufacture of pure nitric acid.

Hydrocyanic Acid.—In a preparation like this, the strength must, of course, be a far more important feature than the purity. The traces of sulphuric acid frequently present seem to me very little, if at all, objectionable in a preparation, the medicinal dose of which is so very small, and which, moreover, is not required in a perfect state of purity for scientific purposes. But the great disparity in the strength of different specimens of this acid is most objectionable and serious, considering its powerful nature. The pharmacopœia requires it to contain 2 per cent. of the anhydrous acid HCN, but my experience tells me that the hydrocyanic acid used for dispensing in druggists' shops varies from two to about a quarter of a per cent., and even less. I know of cases in which two drachms and half an ounce of the acid labelled Acidum hydrocyanicum P.B. have been given to dogs without bringing on the least indisposition. The reason of this is, that the preparation is kept in bottles, the stoppers of which do not fit tightly, so that HCN is continually escaping, and can be distinctly noticed by smell without moving the stopper. This is the case with nearly all the common 1 and 2 oz. stoppered blue glass bottles in which the acid is generally kept by retail chemists. How very necessary it is to keep it in bottles with well-fitting ground stoppers, and tied over with bladder or gutta percha tissue, and how very great a change it undergoes even in a short time, may be seen from the following:—I purchased a two oz. bottle of the pharmacopœia acid, freshly made, from a very respectable wholesale house, and at once estimated its strength by volumetric analysis. It contained 1·6 instead of 2 per cent. It was kept in the same bottle without being tied over, and the escape between stopper and neck was noticeable at some distance. After twenty-four hours it contained 1·2, after two

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days hardly one per cent., and after a month it contained only traces of HCN. This explains the great disparity in the effect upon animals produced by samples of the acid procured from different retail establishments. Chemists should, therefore, either prepare their own hydrocyanic acid, or, at any rate, they ought to test its strength by volumetric analysis or by .pondera! analysis with nitrate of silver (taking the specific gravity is altogether insufficient); they should keep it carefully closed, and examine its strength again from time to time, as this preparation may lose in strength however well it is kept.

In performing the volumetric test, it is important that not more solution of caustic soda should be used than is necessary to produce a distinct alkaline reaction, as any large excess would lead to an inaccurate result, too much of the solution of $AgNO_3$ being then required for the formation of a permanent precipitate.

Not desiring to give this report any undue length, I reserve the consideration of phosphoric acid, sulphurous acid, and acetic acid for a future occasion.

MANUFACTURE OF FERROCYANIDE OF POTASSIUM.*

In preparing ferrocyanide of potassium from leather scraps, the scraps are mixed with carbonate of potash and iron filings, and placed in a reverberatory furnace arranged with a shallow cast-iron pan from 40 to 72 inches in diameter, with a rim about 4 inches high. This pan reaches nearly from the bridge to the flue. Sometimes the hot air is applied to the heating of evaporating pans, being carried under them before entering the chimney. Scraps of metal, smith's scales, old nails, &c., may be employed instead of filings; 100 lbs leather require 45 to 48 lbs potash and 2 to 4 lbs iron. If the leather were charred first in a retort the ammonia given off could be collected and sold.

About 200 lbs of potash are melted, and when the whole is red hot the fire is slackened, as the addition of the animal matters develops sufficient heat for the chemical action. The animal matter is thrown in from time to time in small quantities, and mixed by means of a rake suspended by a chain, forcing the leather beneath the melted potash. When all the animal matter has been added the fire is again set away, while the workman continues to work the contents of the pan for two hours, and when the operation is finished the charge is withdrawn into iron barrows. Up to a certain point, the higher the temperature the more rapid is the reaction and the larger the product. The metal, as the fused mass is called, is broken up

*From the Journal of Applied Chemistry.

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when cold, and covered with weak liquors from previous operations, or with fresh water. The whole is gradually raised to boiling, with constant agitation, until all the pieces have disappeared. After being allowed to settle, the liquor, which stands at 20° to 24° B., is drawn off by a leaden syphon, and run into an evaporating pan, where it is concentrated up to 30° B., and then run into large wooden coolers, where it remains for eight days. It is then drawn off and concentrated to 40° B., and allowed to crystallize. Different persons use different methods of lixiviation, some allowing it to digest a day in cold water before they apply heat.

ON THE PREPARATION AND COATING OF IODIDE OF IRON PILLS.*

BY M. MAGNES-LAHENS.

The conditions which assure the best preparation and conservation of the iodide of iron pills, are as follows:

1. For the preparation of iodide of iron, to be used for pills, employ very little water, so that a pill mass of good consistence may be obtained with very little evaporation.

2. Avoid the filtration of the solution of iodide of iron; it alters the salt, and a portion of it is lost by being retained in the filter.

3. Take a sufficient quantity of iron, so that a small quantity of it will remain in excess after the complete saturation of the iodine; this excess of iron prevents the alteration of the iodide, during the preparation as well as while keeping the pills.

4. Substitute a mixture of gum and sugar for the honey, which presents the triple inconvenience of being acid, of rendering the exact formation of the pill mass rather difficult owing to the water, which it contains in great abundance, and of being very hygrometric when concentrated.

5. Use gum arabic in preference to gum tragacanth, because it gives a mass less elastic, more homogeneous and dissolving better and quicker in the stomach.

6. Use an iron dish instead of glass or porcelain vessels.

7. Operate at a temperature of 50° to 60° C. (122° to 140° F.)

These rules form the basis of the formula, and of the mode of operation, which is as follows:

Take of—

*Translated from Journ. de Pharm. et de Chim., 1873, Oct., p. 328—330, in the American Journal of Pharmacy.

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Pure iodine	4·10 grams.
Powdered iron	1·90 "
Powdered sugar	2·50 "
Powdered gum arabic	2·50 "
Distilled water	2·50 "

Put in an iron dish the water and the powdered iron, add the iodine gradually, and facilitate the reaction by stirring with a spatula of iron and by warming a little; when the reaction is complete, add the gum and the sugar, then heat to about 50° C., stirring continually, and until the mass will cease to drop, when a little is taken up with the end of the spatula. When that has been reached, the operation offers no further difficulties; the pills may be readily rolled out and coated.

To obtain the pills, incorporate into the mass 5 grams of powdered liquorice root, if necessary; heat it for some minutes, divide the mass into one hundred pills, roll them in the powdered gum, and, if desired, coat with mastic and tolu.

For sugar-coated pills (dragées), incorporate with the mass 7·50 grams of powdered gum arabic, then heat it slightly to soften it. The hundred pills obtained are rolled in powdered gum arabic, then placed in a suitable vessel, heated and agitated with a circular motion until of the proper hardness, after which they may be sugar-coated.

Each pill and each degrée contains about 5 centrigrams of iodide of iron and one centrigram of powdered iron.

The iodide of iron is in a state of perfect purity, and may be dosed with great precision. Put in cold water some months after their preparation, they will dissolve, save the excess of iron, without coloring it.

The following is the mode of coating as proposed by Mr. Magnes-Lahens: Roll the pills quickly, about fifty at a time, with the hand in a clear mucilage of gum arabic spread thinly in a saucer; when they are completely moistened throw them into a basin containing a mixture of sugar, 9 parts, with gum arabic one part; agitate them until they are covered with a layer of the powder, heat them for about eight or ten minutes, at first very slightly, and afterwards increase the heat, rotating the pills continually. After cooling coat them a second and then a third time, following the process just described. These pills may thus be prepared in small or large quantities; in the latter case they should be put in the drying closet after each coating. Made with this precaution they will keep a long time in a good condition. C. J. M.

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COAL TAR PITCH, OR ASPHALT.*

BY DR. E. A. BEHRENS.

When coal tar is subjected to fractional distillation, various light and heavy oils are separated, as already described in the June number of this journal. The heaviest of these, and one containing the anthracene, has a specific gravity of 1.12. After this oil has all been distilled off there remains in the retort a residue resembling pitch, to which the name of asphalt is incorrectly given. In large works, where time is an important factor, it would be impracticable to leave this asphalt in the retort until so cool that there would be no danger of fire on taking it out, and until it would no longer give off too much vapor on being empted into open ditches. In ordinary kettles, which hold 20,000 or 25,000 kilos. of tar, of which about 55 per cent.. or 11,000 to 14,000 kilos., is pitch, it would be at least thirty-six hours before it would get so cool that the kettle could be used again, and the work would be delayed for that length of time. It is, therefore, allowed to flow at first, about nine hours after the distillation is stopped, into an iron receiver, situated lower than the outlet cock on the bottom of the retort, and provided on top with a small opening. Here it is left to cool until near the point of solidification, but yet fluid. Then it is allowed to flow into a cemented trench, only one foot to twenty inches deep, where it becomes solid almost immediately.

In this condition it is a black, shining solid, with an average specific gravity of 1.3, and almost tasteless to the tongue. If the oils are removed to a specific gravity of 1.12 it possesses but little elasticity, and can be rubbed to a powder between the teeth. If six or seven per cent. of oil be left in the pitch, the distillation being stopped as soon as the specific gravity of the oil flowing from the worm has risen to 1.09, the pitch is much softer, is not rubbed to powder, but can be kneaded between the teeth like chewing gum. This practical method of determining the hardness of asphalt is a very delicate one, and with a little practice a person may safely judge of its quality. This softer pitch is blacker and more shiny than the hard pitch, which has more of a dead surface and gray color. The latter is also more porous.

The melting point of the asphalt depends, of course, on the hardness. It is difficult to determine it accurately. On being warmed it first gets soft, then gradually becomes viscous, in which condition it will take any desired form. At 150° C. it is a thick fluid, and at a higher temperature becomes thin, like oil, and gives off vapors very irritating to the eyes and skin. The inflammation thus produced is often so great as to cause great pain. The pitch, in a finely-divided

*From the Journal of Applied Chemistry.

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state, acts in a similar manner, especially in warm air. The workmen who dig out the pitch from the trenches are often troubled with inflammation of the eyes. The best protection is glasses set in fine wire gauze which entirely covers the eye; besides, the work should be done as much as possible at night. Instead of letting it flow into trenches, and then transporting it in loose pieces, the softer kinds are run into barrels, where it hardens.

If asphalt or pitch is subjected to dry distillation, oils containing anthracene are first given off. In most manufactories only the oil that goes over first is caught for making the anthracene used for artificial alizarin. The distillation is conducted over a direct fire in a cast iron retort, and, to aid in carrying off the oil vapor, superheated steam is passed over the surface of the pitch. After the anthracene oil has gone over, the mass remaining in the retort is too brittle and lean to be used for ordinary technical purposes. In order to restore to this residue its previous properties, it is treated with a sufficient quantity of the naphthalin obtained in distilling off the tar. If the distillation of the pitch is complete, coke is left behind. The properties of the coke depend upon the temperature to which it has been heated and the time the heat was kept up. If these are insufficient, the coke consists of a dull, black, compact mass, broken by few cracks. On opening the retort, this carbon takes fire, burning with a luminous flame, which issues from the cracks. By burning it out in this way it is more perfectly coked, and this can be hastened by increasing the cracks with a crowbar, but the quality of the product would be very poor. Pitch coke, when it has not been previously hard burned, possesses the property of crumbling almost to powder when put into the fire. In consequence of this, coke burned in the above injurious manner possesses very little cohesion, and has, beside, the disadvantage of adhering tightly to the bottom and sides of the retort, so that great difficulty is experienced in breaking it off and hauling it out. The imperfectly ignited coke, after it is first extinguished, must have water poured over it from time to time, until perfectly cold, since it reignites very readily and burns with a flame. In order to prepare hard coke, after the red fumes evolved at the close of the distillation have ceased the retort must be heated to a bright red heat, and kept so at least eight hours. A complete operation lasts about twenty-four hours. A hard-burned coke adheres but slighty to the sides of the retort, possesses great cohesion, and occurs in long prismatic spinters, which can be removed from the retort almost without the use of a crowbar. Such coke does not reignite after it is once extinguished. It has a light gray color, is very dense, and does not crumble in the fire.

The author has tried various experiments with this coke in English iron work, to test its value for metallurgical purposes. The results were as follows: In cupola furnaces for smelting cast iron, and for refining wrought iron, where wood charcoal is generally used, the

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results were unfavorable, and in the latter case it was hard to separate the slag from the iron. On the contrary, hard-burned pitch coke is very useful for refining pig iron by the English method, where gas coke is mostly employed. Cast iron, refined with this coke, slag and air in a puddling furnace, produced beautiful, pure bar iron. This coke can also be employed for fusing in crucibles.

Although the distillation of pure coal-tar pitch for oil and coke is profitable from an industrial stand point, still it has been as yet little practiced, owing to the difficulty of finding a suitable material for the retort. Cast iron is quite easily destroyed under the influence of the heat and the pitch. Clay retorts, large enough for the purpose, require too much fuel for the quantity of pitch used. Furnaces built of refractory stone are not tight enough, for pitch at a high temperature is as thin as oil. Beside, these furnaces produce far less oil and more gas than cast iron retorts. In some parts of England the pitch is mixed with fine coal and worked in ordinary furnaces merely for the coke.

If the pitch is passed through red hot tubes it is decomposed, and from one kilo. of pitch 250 liters of gas were generated. In these experiments the pitch was first melted, and then passed through an S shaped iron tube, heated to redness. At a lower temperature no decomposition took place, or only a very imperfect one. The gas was passed through a Laming's purifier, and then collected in a graduated gas holder. A photometric test showed that the illuminating power of this gas was nearly equal to zero. It contains some sulphur, but consists principally of hydrogen.

NOTE ON THE HYDRATION OF EXTRACTS.*

BY CHARLES EKIN, F.C.S.

It has occurred to me that Wanklyn's method of limited oxidation by means of an alkaline solution of potassium permanganate might be applied with good results to the assay of such medicinal extracts as are dependent for their activity entirely, or for the most part, on certain alkaloids—all alkaloids yielding a certain portion of their nitrogen as ammonia. Also that it might be made available for the determination of the relative values of the first year's and second year's plant of hyoscyamus, about which a good deal has been taken for granted but nothing yet really proved. And again in the case of conium, to determine which has the greater activity, a tincture made from the fruit or from the leaves. Of course the diffi-

* Read before the British Pharmaceutical Conference, and published in the Pharm. Journ. and Trans., Oct., 1873.

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culty lies in the complete and easy separation of the vegetable proteides of the plant juices, but I am by no means sure that this is not a difficulty that can be overcome, although I regret I have not yet had time to go sufficiently into the subject so as to be able to lay results of any value betore this meeting of the Conference. I have had, however, incidentally to determine the amount of water in various extracts, and have thus so far answered question 66 on the blue paper circulated by the Conference, viz., "Is it possible to assign a definite degree of hydration to medicinal extracts with a view to uniformity of strength?"

I believe it is quite possible to do so, certainly with some if not with all extracts.

I find that extracts of fair average consistence for pill-making, when subjected to the heat of a water-bath, in the cases of belladonna and hyoscyamus lose 20 per cent. of their weight, and in the case of conium, 25 per cent.

The plan I adopted was to spread the extracts very thinly on a thin platinum capsule, and dry at a temperature of 212° until it ceased to lose weight. Various experiments with the same extract gave in this way very constant results. At first I operated on quantities of 10 grains at a time, but I found that several hours were then required for complete desiccation, whereas if only one or two grains were used the time required was little more than half an hour.

The consistence of extracts varies so much that it would seem advisable to define in the Pharmacopœia the amount of water each should contain, the amount to be determined as I have recommended. When once a standard has been set up there would be practically little difficulty to manufacturers, for I find after a few trials the eye can determine from the consistence of the extract, to less than 1 per cent., the amount of water present.

A REVOLUTION IN THE MANUFACTURE OF CARBONATE OF SODA.*

BY DR. RUDOLPH WAGNER.

Six years ago, when the international jury at the Paris Exposition expressed their opinion upon the state of the soda industry at that time, all the judges, whether practical or theoretical men, believed that Leblanc's process would hold the field for a long time yet. This seemed still more probable since a process had just been introduced for recovering the sulphur from the soda residues. At that time all

*From the Journal of Applied Chemistry.

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the soda in use was prepared by this process, excepting a comparatively small amount obtained from Chili saltpetre and cryolite, although there were already tangible indications that soda could be made on a large scale by another method which would be cheaper than Leblanc's process.

The chemical section of the international jury at the Vienna Exposition, under the presidency of Prof. A. W. Hofmann, constituted a congress of chemical technology. By its labors during the course of the summer this congress of scientific men was able to authenticate the very important fact that although Leblanc's process might in the future possess some importance for certain branches of the industry, yet in most places another soda process would be introduced in the immediate future, and entirely supersede that of Leblanc Since the time of the Paris Exposition this new process has grown from a small germ to a strong tree.

The process in question, and which is called by Prof. A. W. Hofmann the amonnia process, is not new from either a chemical or scientific point of view. It belongs to the same class of methods as those in which oxide of lead, bicarbonate of magnesia, quick lime, alumina, silicate of alumina, oxide of chromium or fluosilic acid are employed to decompose chloride of sodium and convert it directly into soda or its carbonate. None of these attempts met with a succes deserving of notice, although for a century past efforts have been made to render them practically operative. The new process is founded upon a reaction noticed over thirty years ago—that of bicarbonate of ammonia upon a strong solution of common salt. The greater part of the sodium is precipitated as a bicarbonate, while chloride of ammonium remains in solution, from which the ammonia for a second operation is expelled by quick lime. The carbonic acid necessary to convert the ammonia into bicarbonate of ammonia, and thus make the process a continuous one, is obtained by heating the bicarbonate of soda to convert it into the simple carbonate.

The sensation which the ammonia process has created in industrial circles will render a brief history of its development not uninteresting.

So far as I know, Harrison, Dyer, Grey and Hemming were the first to patent the ammonia process in Great Britain in 1838.* "Great expectations" were excited by it but it soon sank into oblivion. Thirty or forty years ago the manufacture of soda was by no means at the head of the great branches of industry ; at that time, too, ammonia was not to be had cheaply and in immense quantities, and that branch of machine building which has furnished the necessary apparatus for chemical industries did not exist. Besides this, Anthon, of Prague, in 1840, claimed to have proved that in the ammonia process a very considerable portion of the common salt remained undecomposed.

After a sleep of sixteen years the ammonia process again enter-

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ed the field. On the 26th of may, 1854, Turck took out a patent in France, and on the 21st of June, the same year, Schlœsing, chemist of the Imperial tobacco factory at Paris, took out a patent for France and Great Britain. The mechanical portion and machinery for Schlœsing's process were designed by Engineer E. Rolland, director of the tobacco factory. In 1855 a company was organized to work this process. An experimental manufactory was started at Puteaux, near Paris, but owing to its situation and arrangements as well as to the salt monopoly, it could not produce soda cheap enough to compete with the other process, and hence, in 1858, the experiment was abandoned Schlœsing and Rolland were of the opinion that sooner or later the new process must come into use in making soda.

It must here be noticed that in 1858 Prof. Heeren, of Hanover, subjected the ammonia process to a very careful test in his laboratory. From his experiments and calculations it was ascertained that this process was better adapted to the manufacture of bicarbonate than of the simple protocarbonate of soda.

To render this sketch more complete and historically true, it must be mentioned that T. Bell, of England, took out a patent Oct. 13, 1857, for a new soda process, which in principle and practice was almost literally the same as that of Dyer.

It was known when the jury was working at Paris in 1867 that essential improvements had been introduced into the ammonia process by the efforts of Margueritte and de Sourdeval, of Paris, and Jas. Young, of Glasgow. A more important fact, however, is that Solvay & Co., of Conillet, in Belgium, actually exhibited at the Paris Exposition carbonate of soda prepared by this new process.

Since that time the ammonia process has been developed and perfected to such an extent, especially by Solvay, Honigmann and Gerstenhœfer, that as early as February, 1873, Prof. A. W. Hofmann, in his introduction to the third group of the catalogue of the Exhibition of the German Empire, was able to make this remark: "At all events the ammonia process is the only one which threatens to become an important competitor of the now almost exclusively employed process of Leblanc" The Vienna Exposition has since proved the truth of his assertion.

There are now large soda works in England, Hungary Switzerland, Westphalia, Thuringia and Baden which employ the improved ammonia process, and some of them make fifteen tons of soda per day.

The advantages of the new process over that of Leblanc are very evident, although the details of the process have not yet been made public. The chief advantage consists in the direct conversion of salt into carbonate of soda, and next in the fact that from a saturated brine only the sodium is precipitated, with none of the other metals of the mother liquor. Beside this, the product is absolutely free from all sulphur compounds, the soda is of a high grade, the apparatus and

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utensils are very simple, there is a great saving of labor and fuel, and no noxious gases and waste products are produced, which is of importance from a sanitary point of view. The only weak point of the ammonia process is the loss of the chlorine, which is converted into worthless chloride of calcium.

The effect which the general introduction of the new soda process will exert upon large chemical industries in general, and especially upon the consumption of sulphur, the manufacture of sulphuric acid, and the price of muriatic acid and chloride of lime, cannot be over-looked.

AN IMPROVED PREPARATION OF KINO.

BY GEORGE ELLINOR.

The tincture of kino of the Pharmacopœia is so unstable that it is very little used.

Kino possessing advantages over most of the astringents, having a peculiar action on the mucous membrane of the intestinal canal, it is desirous to have a solution of the drug in a stable form, and miscible with water in any proportion.

In the liquor kino concent, or fortier, I now exhibit, this is fully accomplished.

This liquor kino fortier, diluted with water to form the relative strength of the tincture, will be found most efficacious and reliable.

Liquor kino concent. or fortier is prepared in the following manner, viz.:

Kino	℥ j
Glycerine	℥ ij
Water to	℥ iv

Rub together in a mortar the kino, glycerine, and ℥ j of the water, until dissolved, then make up to f ℥ iv by the addition of water.

To the liquor kino fort. one volume by measure mixed with four volumes of water will thus form the liq. kino corresponding with the strength of the tincture relatively, but really stronger, the whole of the kino being dissolved, and this is entirely soluble in water.

I prefer making the liquor kino in the concentrated form because from it can be so readily prepared the representative of the Pharmacopœia.

* Read before the British Pharmaceutical Conference; reported in the Pharm. Journ. & Trans. Oct. 25, 1872.

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The whole of the kino is dissolved; the sand and other earthy matter is thrown down after standing a week or so.

I believe this preparation to be very efficacious, and adapted to mixture of chalk, and all diarrhœa mixtures, and with a great amount of saving in the expense of rectified spirit, the cost being less than 6d per Oj. of the preparation as compared with the price of the tincture.

I think it may take a place with the glycerates of the Pharmacopœia.

As far as I have been able to determine, it is far preferable to the tincture in its action and stability.

The reading of the paper gave rise to the following discussion:

The PRESIDENT: It was suggested long ago in America that a glycerine solution of kino might be used advantageously, but there are very strong objections to using glycerine with astringents.

Mr. WILLIAMS: Is the specimen of the solution produced liable to pectize by keeping?

Mr. GREENISH: We ought to be very careful before we venture to suggest any alteration in the method of making tinctures laid down in the Pharmacopœia. I make tincture of kino by percolation which never gelatinizes, even though kept for a considerable time.

Mr. GROVES: The pectization of kino depends greatly upon the age of the substance; fresh kino does not pectize, whilst that which is two or three years old probably will do so.

The PRESIDENT: Just to bear out what I stated a moment ago, I may say that I know of one case in which three hundred grains of perchloride of iron dissolved in pure glycerine were swallowed by mistake without any ill effect, whilst a very much smaller quantity dissolved in water must have caused serious results. Again, I know several instances in which medical men have been disappointed in obtaining the full astringent effect they expected from glycerinum acidi tannici, when a strong aqueous solution has answered admirably. Glycerine, I am certain, has a powerful action in weakening the effect of astringents, and its indiscriminate use in pharmacy is much to be deprecated.

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NOTE ON LIATRIS ODORATISSIMA.*

BY JOHN R. JACKSON, A.L.S.,

Curator of the Kew Museums.

Under the name of wild vanilla the leaves of *Liatris Odoratissima*, Willd., are sometimes used in North America as a substitute for true vanilla. The plant belongs to the Compositæ and grows to height of three to four feet with an erect annual stem, terminated by a corymb of beautiful purple flowers; the odour of the leaves is very perceptible when bruised, and this odour has been referred to the presence of the principle coumarin. It is said that many of the flavouring fruit essences, perfumes, etc., are produced in America from the leaves of this plant, and they have also been occasionally employed to give a pleasant fragrance to tobacco and cigars. This application has been largely extended of late, and the leaves are brought to market in small bales. They are mostly selected from the lower part of the plant, and are about six inches long by three broad. The smaller and less perfect leaves are used for fillers of cigars, while the large and sound ones are used for wrappers.

The plant is said to be very abundant in Florida, and it has been suggested that if it were submitted to cultivation and the stock cut back so as to induce the development of large leaves it might be improved in quality and value. The flavor that these leaves impart to tobacco is approved of by many persons and it has the advantage of having no deleterious properties. Another use to which the leaves are put is for the purpose of protecting woollen cloths from the attacks of moths. Other species of *Liatris*, such as *L. scarioso*, *L. squarrosa*, and *L. spicata* are considered to have medicinal properties: the former is employed in making a gargle for sore throats, also in gonorrhœa, and it has a reputation for the cure of snake bites. The root of *L. squarrosa* is acrid and pungent, and yields a balsamic substance in alcohol. *L. spicata* is called button snake root and has some reputation as a stimulant, diuretic and expectorant. It is used in the form of a tincture or decoction made from the root.

* From the Pharm. Journ. & Trans., Oct., 1873.

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COPPER AMONG THE ANCIENTS.

The copper operations of the ancients in the Lake Superior regions still remain a mystery, though there seems every reason to believe that they were conducted by the Aztecs, who left their haunts in Mexico and the Ohio Valley, and made summer pilgrimages to the copper region. There has not been found either bones or implements or any means of identification whatever, except the tools which are occasionally picked up in the ancient pits. And some of these pits and workings are so completely covered with drift and formation, that it is impossible to form any estimate in regard to the time when they were operated. The presence of bismuth, lead, mercury, and arsenic in this copper enabled these ancient miners to mould it into cutting tools, which possessed a finer and tougher edge than pure metal, and answered to some extent the place of iron and steel—though the tools found, after being cleaned of their oxidation, do not appear materially harder than the copper itself. Along the courses of some of the veins, old shafts or surface gougings have been found, which, when freed of débris, show plainly the methods pursued by their former workers in extracting the ore. So far as can be judged, the rock was softened and cracked by means of fire built against it, and kept going for days, then the loosened masses are pried out by poles. Remains are found of huge stone hammers, and copper chisels and other cutting tools, and in several cases large masses of metal have been found that have been dug around on all sides and partly underneath, and then left as if the miners had given up all hopes of detaching and raising them to the surface.

The only reason for inferring that this was the work of the Aztecs is the fact that specimens of this copper, with native silver adhering, have been found in the mounds of the Ohio Valley, having evidently been used as ornaments by the mound builders, and buried with them. Similar specimens have been handed down for many generations in Mexcio, as having been possessed by the Aztecs, who were said to be cognizant of valuable mineral lands far to the north. It has been doubted by many that the copper tools of the ancients really possessed the density and cutting power usually ascribed to them. Sir Gardiner Wilkinson, however, remarks that some of the bronze daggers, found by him in Egyptian tombs, were so beautifully tempered, that after having lain buried for 3,000 years they possessed when dug up, an elasticity almost equal to that of steel. It is thus definitely proven that the Egyptians really did possess an art, which has been lost, of making bronze of a particularly fine temper, capable of taking and keeping a sharp edge.—*Marquette Mining Journal.*

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Editorial.

THE TRAFFIC IN PERCENTAGES.

This subject has, at one time or another, been fully discussed in this journal, and as often have we taken the opportunity of expressing an opinion, which, we are well assured, represents not only the true state of the case, but the *disinterested* belief of the majority of our readers. So long as an evil continues, it becomes our duty to aid in its extermination, nor should our efforts relax until this result be attained.

It is said that every evil will, in time, eradicate itself, and we are pleased to learn that the percentage system forms no exception to this rule, but is progressing favorably in the operation of starving itself out. This result is being accelerated by the well-directed efforts of those who oppose the system. The improved status of pharmacists, generally, has also brought with it an independence of feeling which is directly hostile and repugnant to the debasing truckling which characterises the trade in percentages. The severance of this self-imposed bond of servility will obliterate the sole remaining sign of medical domination, erase a most dishonorable blot from the pharmaceutical escutcheon, and remove a cause of ill-feeling, which, of all others, has been a most prolific source of contention.

Some time ago this subject was taken up by the medical and pharmaceutical press of Great Britain. The general opinion held there is well expressed by the following extract taken from the *Pharmaceutical Journal* of London :--

"In this country, as well as in America, it is a violation of medical etiquette and respectability for a physician to participate directly or indirectly in the profit arising out of the dispensing of his prescriptions. It would be a libel to accuse either a medical man of receiving, or a chemist of paying, a share of the spoil as an equivalent for patronage.

"A man who professes only to prescribe, and clandestinely takes a profit on the medicine, is deceiving his patients and robbing

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the druggist. The deception on the patient is two-fold, for he is strictly charged to go to one particular druggist, on the ground that no other is to be depended on; whereas the actual reason is, because the party recommended is the accomplice, and the prescriber is a participator in the profit.

This collusion is a deception on the public. A physician or prescribing surgeon receives his usual fee, or he prescribes gratis, taking credit for benevolence. When he takes his percentage or bonus, in the first case he is paid twice, in the second case he receives money for that which he has already given away. He has a direct interest in drenching his patients with medicine, and prescribing it in its most expensive form, although he must be aware that they consult him in the full belief that he is disinterested in this respect.

"We are convinced that no respectable member of the medical profession is guilty of this degrading practice, but in all classes of society there are shades of character ranging from white to black."

In the cities and larger towns of Canada, the percentage system has been largely and openly practiced, but, as we have said, is rapidly falling into disuse. A Montreal correspondent, writing of the state of affairs in that city, says, "With, perhaps, two or three "exceptions, the leading physicians are pretty well frightened out of "the business, and if they accept any pecuniary consideration, it "is in the shape of a present at Christmas." Considering that Montreal might have been considered the headquarters of this disgraceful practice, our correspondent's report is very encouraging, and should stimulate to renewed exertions those, who, for the past two years, have waged an indefatigable and ceaseless warfare, which is now so near a successful termination.

Appalling Case of Poisoning at Montreal.—Just at the time of going to press we have received a few particulars relating to a most shocking case of poisoning which occurred on Thursday, Nov. 27th, at Montreal, and by which six persons have already lost their lives. As represented to us, the particulars are substantially as follows: A few days previous to the date above mentioned, Messrs. Evans, Mercer & Co., wholesale druggists, sent, to a customer, a

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bottle containing a half gallon of *Vinum Colchici*—whether of the seed, or root, we cannot say. The customer, finding that he had already a sufficient quantity on hand, decided on returning that last received. This was accordingly done, but the carter in whose charge it was placed, reported to his employers, next morning, that the bottle was missing, and that, as it could not have dropped off the sleigh, it must have been stolen. This appears to have been the case, as it has been ascertained that a man named Flaherty and a little boy, both residents of one of the lowest localities in the city, extracted the bottle from the sleigh and took it home to their residence in Tubb's Yard, where it was examined, and the contents pronounced to be sherry. Acting on this supposition, some of the denizens of the place helped themselves pretty plentifully; nor were they undeceived until a little boy, to whom a mugful had been given, was suddenly taken ill, and, in a short time, died. Consternation spread rapidly amongst those who had partaken of the death-dealing liquid, and the feeling was ten-fold increased when it was discovered that six more persons were evidently under the influence of the fatal draught. Medical men were promptly in attendance, but the poison had too surely done its work, and ere long five more persons were numbered among its victims. These included the man Flaherty, another man, and three women. At that time the husband of one of the women was evidently at the point of death, and, as a considerable number of persons partook of the wine, it is probable that several more deaths may result. The symptoms of poisoning were those of colchicum—constant vomiting and purging, accompanied with violent abdominal pains. The pulse was weak but rapid, running as high as 120 and 130. Consciousness was, in general, retained almost up to the time of death. As we have said, we are not aware whether the wine was of the root or seeds of colchicum. It will be remembered that the maximum dose of the former preparation is half a drachm, and a case of poisoning has been reported in which only two and a half drachms were taken. A case, however, came under our own observation in which a fluid ounce was unattended with fatal results to a boy who took it under the supposition that it was wine. The *Vinum Colchici seminis*, U.S.P., is frequently ordered in this country. Of this the maximum dose is two drachms; two fluid ounces have proved fatal.

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Editorial Summary.

Ext. Aurantii Cort. Fluid.—Mr. M. Bond contributes to the *American Journal of Pharmacy* a formula for the preparation of a fluid extract of sweet orange peel, to be used for flavouring purposes. The preparation is permanent and possesses all the aroma of the peel, but it is, of course, necessary to use fresh and good rind. The method recommended is as follows: Mix fourteen fluid-ounces of alcohol with two fluid-ounces of glycerine, moisten sixteen ounces of peel, in moderately fine powder, with twelve fluid-ounces of the mixture in a large wedgewood mortar, or any convenient vessel, and having covered it carefully, let it stand for twelve hours; then pack moderately firm in a suitable percolator, and proceed as directed in the officinal directions for preparing fluid extracts. Finish the percolation with a mixture of two parts of alcohol and one part of water; reserving the first fourteen fluid-ounces, add one fluid-ounce of glycerine to the remainder, carefully evaporate to two fluid-ounces and mix with the reserved portion. One fluid-ounce added to fifteen fluid-ounces of simple syrup makes a stronger and better "Syrupus Aurantii Corticis" than the officinal. The resulting syrup is entirely destitute of any opaqueness, and its mode of preparation less troublesome than by the present formula, which is somewhat tedious. Four fluidrachms of the fluid extract and a few drops of solution of citric acid, mixed with one pint of syrup, make a syrup unsurpassed in delicacy of flavor, and unfermentable for use at the mineral water counter.

Artificial Butter.—At the American Institute Fair, lately held at New York, there was exhibited a sample of artificial butter, together with other products made by the Oleo-Margarin Manufacturing Co., of New York. It is not generally known that a palatable butter can be made out of other materials than milk, but this appears to be the case. We learn the following particulars from the *Journal of Applied Chemistry*. The process employed is that of M. Mouriez, of France. The principle material employed is fresh beef suet, which is first hashed in a machine similar to a small sausage grinder, with a fine sieve at one end. The fat is forced through the sieve and comes out in the form of a whitish jelly. It is next placed in steam vats and heated for two hours, nearly to the temperature of boiling water, whereby the olein and stearin are separated from the animal matter. The real fat is then placed in bags containing about two pounds each, and pressed between sheets of

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galvanized iron in an oil press. The yellow oil which oozes from the pores of the cotton consists of olein containing more or less stearin in solution. This oil has neither taste nor smell. The residuum left in the bags is solid stearin, and is used in making candles. The oil is finally mixed with one-fifth its weight of sour milk, and churned for 20 minutes in a cool chamber. The butter thus formed is colored yellow with annatto, salted, and worked like other butter, when it is ready for the table. One hundred pounds of suet will make seventy pounds of butter, twenty pounds of stearin, and ten pounds of scraps.

Action of Sulphate of Iron on Vegetation.—In the *Druggists' Circular* for November is a paper translated from the *Moniteur Scientifique.* Its author, M. Eusebe Gris, has made a number of experiments on the influence of sulphate of iron on vegetation, and comes to the conclusions (*a*) that the salt is a stimulating manure; (*b*) it presents no danger when intelligently applied; (*c*) its action is evident upon the coloring principle of leaves; (*d*) it is so cheap that a few cents' worth is sufficient to treat hundreds of plants (*e*) it might be applied to cultivation on a large scale, and, especially, to the cultivation of fruit. The manner of applying the sulphate is as follows: A solution of two drachms to one quart of water is made, and with this the plants, previously placed in the shade, are watered. It is presumed that the earth surrounding the plant is moist; if this is not the case, a more dilute solution must be used. The solution may be applied daily, for five or six days; about two and a half ounces are sufficient for each watering of an ordinary sized plant, as a calceolaria. Plants which have become sickly, colorless, and etiolated, will, under this treatment, quickly recover a full green color, give finer flowers, send forth more vigorous shoots, and generally show the good effects of the tonic.

New Test for Morphia.—At the meeting of the British Pharmaceutical Conference Mr. L. Siebold read a short paper on a new test for morphine, which he had discovered, and which, in point of delicacy, exceeds any test hitherto known. In its application to the detection of morphia, or opium, in food, the contents of the stomach, etc., are treated in the usual way for the separation of alkaloids, and the matter collected is heated, gently, with a few drops of pure sulphuric acid. A very small quantity of pure perchlorate of potassium is then added. The liquid immediately surrounding the perchlorate will at once assume a deep brown colour, which will soon spread and extend over the greater part of the acid. Warming increases the delicacy of the test. 0·0001 gramme of

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morphia can be distinctly recognized in this way, and no other alkaloid is acted upon in a similar way by the substances named. It is indispensable however for the success of the experiment that the perchlorate of potassium is absolutely free from chlorate; if it is not, it must be heated with successive portions of pure hydrochloric acid until the latter remains colorless and ceases to give off chlorine. After removing the HCl completely by washing with water, the perchlorate must be dried at 212°, and it is then ready for use.

Examination of Sea Water.—In a paper read before the British Pharmaceutical Conference, Mr. G. A. Keyworth detailed the results of a series of experiments made for the purpose of determining the presence of silver, bromine, and iodine in sea water. Silver was first sought for, as it is commonly believed to exist in solution as a chloride. A weak continuous current of electricity was passed through the water, but, though the experiment was continued during four months, no silver was obtained. Sulphuretted hydrogen passed through several gallons of water, also gave negative results. Iodine was obtained in small quantity, or rather its presence was shown by the starch test. Bromine was more abundant, as it could be detected in as small a quantity as one ounce of water.

Transactions of Pharmaceutical Colleges and Societies.

MONTREAL COLLEGE OF PHARMACY.

A monthly meeting of the College of Pharmacy was held on Thursday evening, Nov. 13th, in the Lecture Room of the Pharmaceutical Association, Lagauchetiere st., Mr. H. R. Gray, the president, in the chair, and Mr. Harper, in the absence of Mr. Mattinson, acting as Secretary. After the transaction of the usual routine business, the president announced a donation to the College of a complete set of mineralogical specimens from Dr. Perrigo. Many of these specimens are very rare and valuable, and were collected by the doctor himself.

Dr. Shaw, Lecturer on Chemistry, Medical Faculty of Bishop's College, Montreal, then delivered a most interesting and instructive lecture on oxygen. After stating briefly the properties and leading

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characteristics of the gas, the lecture ralluded to the almost unlimited extent of the diffusion of oxygen throughout the wide domain of nature. It forms one-fifth of the volume of the atmosphere; between one half and one third of the crust of the globe, and the bodies of its inhabitants; no less than eight-ninths of all water; three-fourths of our own bodies, two-fifths of every plant, and at least, one-half of the solid rocks. The immense force which was required to retain the greater part of this quantity of gas in combination was commented on, and the lecturer then passed on to treat at considerable length, the constitution of the principal rocks of which the crust of the earth is composed, and in which oxygen enters so largely as a constituent. In this respect oxygen might be termed the great world-builder. It has been, as it were, the universal cement by which the other elements have been joined together.

The gas, as existing in the atmosphere, was then taken up, and its three leading manifestations were considered: 1st. Its passive state, as in the great bulk of the air. 2nd. Partially or slowly active, as in the processes of decay and respiration. 3rd. Highly active as in the phenomena of combustion. We should have been pleased to have given in full, this most interesting part of the paper, but the amount of space at disposal forbids our attempting more than the concluding remarks regarding the important part which oxygen plays in the animal economy.

"By far the greater part of our daily food consists of varieties of starch or sugar. These two substances are almost identical in composition, and starch may be converted into sugar, with the greatest ease. Leaving out of view the large amount of water which all our food contains, we find that of wheaten bread, no less than 39 per cent consists of starch or sugar; of potatoes fully 92 per cent is made up of the same materials and in general they form over 4-5ths of the solid part of all our food. These substances when taken into the stomach are almost instantaneously converted by the saliva and gastric juice into a variety of sugar known as grape sugar, so called because it is the sweet principle of ripe grapes. The sweet principle of honey and molasses and the incrustation which is so frequently seen on figs and raisins are essentially the same substance. Grape sugar being very soluble, dissolves in the water present and is taken up (absorbed) by the veins, which ramify on the surface of the intestines. The blood now containing sugar in solution, returns through the liver, to the right side of the heart and by the organ which consists of two ingeniously contrived force pumps, arranged side by side, it is forced through the lungs, where the sugar is brought in contact with the air. Let us examine for a moment this remarkable structure. The lungs as is well known, consist of two large organs, on either side of the chest, called the left and right lung. The right is divided into 3 lobes and the left into two. On examining one of these lobes, it will be found to be made up of an immense

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number of small bags or cells, all closely packed together. These cells connect by means of the bronchial tubes and windpipe with the air, through the nose and mouth. They vary in size, but on an average are about 1-100 of an inch in diameter and the total number of the cells in the lungs has been estimated at 600 millions. Their walls are exceedingly thin and the cells may therefore, be easily compressed. The whole mass of the lungs is also exceedingly elastic and by the action of a system of muscles, their volume is alternately increased and diminished in the process of respiration. The amount of air which is thus drawn into the cells and again expelled at each inspiration, differs in different individuals. The average quantity in ordinary tranquil respiration of an adult is a pint; but in a full respiration, it may be as much as 2½ pints, and by an effort, the lungs may be made to inhale from 5 to 7 pints. As the average, in health, is about 18 respirations per minute, which corresponds to about 18 pints of air inhaled and exhaled, it follows that about 3,000 gallons of air pass through the lungs of an adult man every day, Some estimate it as high as 4,000 gallons a day for an average in ordinary circumstances and as high as 5,700 gallons a day for an athletic man undergoing severe exertion. In order that you may form an idea of this quantity, I will add that 4,000 gallons would fill a room measuring 8½ feet in every dimension.

Let us now turn to the blood and examine the apparatus by which it is exposed to the air in the lungs. As we have already seen, the blood charged with sugar is received into the heart, from whence is is pumped through a tube called the pulmonary artery into the lungs. This artery divides again and again until it is reduced to very small capillary tubes, which ramify on the surfaces of the air cells. The walls of these capillaries are formed of the thinnest conceivable membrane, so as to bring the blood into as close a contact as possible with the air. Here oxygen gas is absorbed in large quantities and carbonic anhydride given off. The blood now holds in solution, at the same time, oxygen gas and sugar and thus charged it returns by a series of veins to the left side of the heart, when by the second of the two force-pumps, it is again forced through the general circulation of the body, and whilst this is being accomplished the oxygen burns up the sugar. Sugar like wood consists of carbon, hydrogen and oxygen. The last two are present in the proportion to form water, so that sugar may be said to be composed of carbon and water. Of these two substances the carbon only is combustible. This during the circulation of the blood, is slowly burnt up by the oxygen and converted into CO_2, carbonic anhydride, which remains in solution until it is discharged, when the blood returns again to the lungs or else escapes through the skin. Thus it appears that respiration in a process of combustion, in which the fuel is sugar and the smoke carbonic anhydride and aqueous vapour. I need not dwell upon the fact so universally known as the presence of carbonic anhy-

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dride in the breath. All may not know, however, how large is the volume of this gas which they daily exhale. It varies with age, sex, food, health and a variety of other circumstances. In a full grown man the weight of carbonic anhydride evolved from the lungs varies from 1 to 3 lbs in 24 hours, which is equivalent to from 9 to 27 cubic feet. From the quantity of carbonic anhydride exhaled, we can readily calculate the amount of carbon burnt which will in a full grown man vary from 5 to 15 ounces in 24 hours. Moreover it has been proved, that the quantity of heat evolved by a given amount of charcoal in burning is absolutely the same, whether the combustion be rapid or slow, so that the same amount of heat has been generated in our bodies, during the last 24 hours by the slow process of respiration, as would have been set by the burning of 12 oz. of carbon or charcoal for each man. It is no wonder then, that the temperature of the body is always so much above that of the air, and that even in the coldest climate, the heat of the blood is maintained as high as 96°F. In regulating the temperature of his body, man follows instinctively the same rules of common sense, which he applies to warming his dwellings. In proportion as the climate is cold, he supplies the loss of heat by burning more fuel in his body and hence the statements of arctic voyagers, that 12 lbs. of tallow candles make only an average meal for an Esquimaux, are not inconsistent with the deductions of science.

Respiration then, like decay, is a process of slow combustion, in which the oxygen of the air attacks and consumes even at ordinary temperatures, the sugar in the blood. Let us now compare with it the rapid combustion of the same substance. In this crucible I have mixed two ounces of sugar and two ounces and a quarter of solidfied oxygen, solidified by the force of chemical affinity and bound up in a white salt called potassic chlorate. The oxygen and sugar are here lying side by side as in the blood, but the condition of slow combustion which exists in the body, not being present in the crucible, they will remain in contact indefinitely until some external agency is applied. The oxygen is now in its passive condition, but one single drop of sulphuric acid will arouse its dormant energies and you have instantly one of the most dazzling displays of combustive energy, which can be produced by art. The only difference between this brilliant deflagration and the combustion which has gone on in each of our bodies is simply this: That the heat which in the blood has been imperceptibly evolved during the last hour, was here concentrated in a few seconds and therefore produced the phenomena of intense ignition. All the other conditions, the material burnt the quantity of material employed, the products generated and the amount of heat evolved are in both cases essentially the same. On comparing these two phenomena together, reflect for a moment on the false estimate, which we are apt to make of the phenomena of nature. The splendid displays of

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combustion arrest our attention by their very brilliancy, while we overlook the silent yet ceaseless processes of respiration and decay, before which in importance and magnitude the grandest conflagrations sink into insignificance. These are but the spasmodic efforts of nature; there are appointed means by which the harmony and order of creation are preserved. It has been calculated that 3,571,428 tons of oxygen are consumed in 24 hours for the purposes of respiration in man and the lower animals, for fires, furnaces, &c., and the processes of decay and fermentation. If such be the daily requisition of this gas, will not the oxygen of the atmosphere be in time exhausted? The whole amount of oxygen in the atmosphere has been calculated to be about 1,178,158 thousand millions of tons: a supply which at the present rate of consumption would last about 900,000 years. We need not therefore, fear that the amount of oxygen in the atmosphere will be sensibly diminished in our day and generation, but then this period great as it is, is not to be compared with the ages of geological time. The time which has elapsed since the coal we are now burning was deposited in its beds, is to be counted by many millions of years, so that since the coal epoch, the oxygen of the atmosphere must have been all consumed again and again. Why then has it not all been removed from the atmosphere? Simply because in the beautiful balance of creation, there is always some recuperative process for every such loss. In the case before us it is as you all know, the vegetation. As fast as our breath, our fires and the process of decay around us, are removing the life-giving oxygen, just so fast is it restored by every green leaf, which wanes in the sunshine, and by every blade of grass, which sprouts under our feet. What the animal removes the plant restores. The sun's rays acting upon the green surface of the leaf, decompose in some mysterious way the carbonic anhydride, overcoming the intense affinities of its elements, fixing the carbon and setting free the oxygen to be restored to the air. It is the special office of plants to elaborate all the materials of organized beings. The animal receives these materials and builds with them its various tissues, but no sooner are the cell walls finished and the structure ready to discharge its vital functions, than it is consumed by almost the very act which gave it life. The carbonic anhydride, water and ammonia are restored to the atmosphere and the cycle is complete.

Of the Divine economy the sun's rays are the great moving cause, and it is their mysterious power which is constantly reappearing in all the varied phases of organic life. And not in these alone, for it is easy to prove that this same gentle influence keeps in motion the aerial currents which blow our ships across the ocean. It raises the water which turns the wheels of our factories. It drives the locomotive over the iron roads and impels the steamer through the waves. It roars at the cannon's mouth and charges the grander

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artillery of the skies. There is no motion on the globe which cannot be traced directly or indirectly to the sun, and were his rays to lose their mysterious power, all nature would become silent, motionless and dead. But in tracing to the sun all these varied phenomena let us not forget that we have not yet found the first great cause. Who made the sun? or how did it come into existence? and how is it maintained in its proper position? Who regulates its forces and tempers its influences to the required ends? And what is the sun? It is but a small star in the infinitude of space, where shine Sirius and Arcturus, Regulus and Aldebaran, Procyon and Capella with innumerable others, all shedding forth a far mightier effluence than our feeble star. Yet the grand total of all the powers streaming from all the suns which human eye has seen or which still lie undiscovered in the depth of space, alone represents the active energy of the universe. Gentlemen, there are two theories of creation. One regards this energy as an unintelligent power. The other sees in it simply the will of the Eternal Jehovah. They are both theories. We cannot substantiate either, but which do you think the most probable.

PHILADELPHIA COLLEGE OF PHARMACY.

A pharmaceutical meeting was held on the afternoon of October 21st, 1873, in the hall of the College. Present, twenty members. Dillwyn Parrish, President, in the chair.

Owing to the lateness of the hour at which the meeting was convened, on account of a preceding meeting occupying so much of the time, the number of members remaining was small.

Prof. Maisch read a letter from Clemmons Parrish, tendering his resignation as Registrar, his present engagements preventing his attending to the duties of the office. On motion, his resignation was accepted.

This being the regular time for electing a Registrar, as provided in the by-laws, Joseph P. Remington was elected to fill the office.

Richard V. Mattison read a paper on Fluid Extracts of Ipecac, in which he suggests an improvement in the present officinal formula, by depriving the percolate of the peculiar substance which causes turbidity, and decreasing the proportion of glycerin 12½ per cent.

Dr. W. H. Pile called attention to a sample of adulterated oil of gaultheria, which seems now to be pressing on the market. The adulterating substance he found to be chloroform, and the means adopted for detecting the fraud were, first, by taking the specific gravity, and, secondly, noting the boiling-point. The specific gravity of true oil of gaultheria is 1·18, whilst that of the sample in

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question was 1·24. The boiling-point of the true oil is 400° F., whilst the adulterated oil boiled actively at 200° F. By shaking the adulterated oil in a test-tube, after slightly warming, the odor of chloroform is distinctly apparent. He ascertained that this impurity existed in the oil in the proportion of 1 part of chloroform to 4 parts of oil, and his mode of arriving at the quantitative estimation consisted in mixing certain proportions of chloroform and oil together until he obtained the same specific gravity as the adulterated sample had.

Charles Bullock stated that he had met with two cans of the oil, which he thought probably belonged to the same lot as that mentioned by Dr. Pile, and he exhibited a very neat and convenient little apparatus for detecting and separating the mixed liquids by fractional distillation. It consisted of a small glass flask, into which the oil was poured; a bulb-like stopper, having a tubulure at the top, which had a rather long tube leading from it at a similar angle to that usually seen in alembics, and a thermometer, which passed through the tubulure and into the bulb of the stopper. If heat is now applied to the flask, the temperature of the vapor which fills the bulb and is being condensed can easily be read off. By this method he was able to separate the chloroform from the oil, and he also found that it contained a very large portion of oil of sassafras. The manner in which the oil had been made seemed to have been: Take 4 or 5 lbs. oil of sassafras, 1 lb. oil of gaultheria, and chloroform sufficient quantity to bring up the specific gravity to the right point.

Prof. Maisch, speaking of oil of gaultheria adulterated with oil of sassafras, said that when the adulterated oil is treated in the cold with commercial nitric acid a deep red resinous mass separates, whilst the pure oil of gaultheria is not colored by it.

Charles Bullock reported that, having some suspicions that the heavy lubricating coal oils were used for the purposes of adulteration, he took the specific gravity of one of the most dense in the market, and found it to be only ·883; he regarded them on this account unfit for the purpose.

Prof. Maisch exhibited three samples of Pareira brava, two of which differed from the kind usually seen in commerce of late years, and a sample of the real Pareira, which has been proved by Mr. Daniel Hunbury to be produced by *Chondodendron tomentosum*. The three spurious pareiras, all of which were mentioned in Mr. Hanbury's paper, were the usual commercial variety, with the layers of wood in more or less eccentric layers; a sample of a bright yellow color internally and with the wood developed almost altogether in one direction, and a sample nearly tasteless, the wood of which is in more concentric layers; the sources of these three kinds are unknown, but all are derived from plants of the order Menispermaceæ.

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Mr. Gaillard spoke of having received a sample of what purported to be French quinine, from a friend in the South, who had been offered the article at a very low price, and had sent him a portion to ascertain why it could be sold so low. It proved to be the old fraud—muriate of cinchonia.

Prof. Maisch read an extract from the "Circular of the Philadelphia Drug Exchange" in relation to this subject, as follows:

Cinchonia Muriate, From the "Druggists' Circular," New York, October, 1873, we extract the following statement reported in the Transactions of the American Pharmaceutical Association at Richmond:

"Prof. Maisch drew attention to the fact that very large quantities of muriate of cinchonia had been put up in the style of French quinine, and having an imitation of Pelletier's label upon it, and that it had been extensively introduced in the Southern States.

"Dr. Squibb said that some of the manufacturers of quinine were in part responsible for this attempt to defraud the people, as they in the course of their manufacture accumulated large qnantities of the cinchonia salts, and they disposed of them indiscriminately to any who applied for them."

We take occasion to say that, so far as *American* manufacturers of sulphate of quinia are concerned (1), they do not dispose of the cinchonia salts indiscriminately to any who apply for them, but only to regular customers who pay for them; and (2), so far from being responsible for this attempt to defraud the people, they purposely avoid handling *muriate of cinchonia*—they do not make the article.

We consider that this statement is eminently due to our friends who make sulph. quinia here, for they have not only declined making, but refuse to deal in, the article of *muriate of cinchonia*, on account of its close resemblance to *sulphate of quinia*,

Muriate of cinchonia is largely sold in *Europe*, but not in this country, so far as sulph. quinia manufacturers are interested.

It was suggested that advantage might be taken of the condition of affairs to ascertain what virtues muriate of cinchonia possesses as an antiperiodic.

Jos. P. Remington introduced the subject of Diluted Phosphoric Acid, and gave the results of an experiment based on a fact mentioned to him by Prof. Maisch, in which it was shown that diluted phosphoric acid, made from the phosphorus direct, according to the U. S. Pharmacopœia, would make a clear solution when mixed with an equal quantity of tincture of chloride of iron, whilst that made from the glacial phosphoric acid produced a precipitate when similarly mixed.

Prof. Maisch stated that it required repeated treatment with nitric acid in the manner laid down in the second formula of the Pharmacopœia in order to thoroughly convert the monobasic into the tribasic variety.

The meeting then adjourned.

JOSEPH P. REMINGTON, *Registrar.*

—*American Journal of Pharmacy.*

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Practical Formulæ

Red Ink.—Prof. R. Boettger recommends a red ink which is not affected by powerful chemical agents. The ink is prepared as follows: Carmine is triturated, in a porcelain mortar, with a little solution of soluble glass; afterwards more of this solution is added, until the desired shade and fluidity has been attained. The ink when used dries rapidly, with a gloss, and when not in use should be protected from contact with the atmosphere by closing the vial with an oiled cork.—*Chem. Centralbl.*, 1873, *No* 30, *in Am. Jour. Pharm.*

Red Brown Wash for Wood.—1 lb. of sulphate of copper is dissolved in 8 lbs. of water, and the solution applied to the wood with on ordinary brush; this is to be followed by a solution of ½ lb. ferrocyanide of potassium in 8 lbs. of water. The ferrocyanide of copper thus deposited upon the wood fibre is not only not altered by atmospheric influences, but it tends also to preserve the wood from the growth upon it of moss, lichens, fungi, and from the attacks of insects. The color may be darkened or lightened by increasing or decreasing the strength of the solutions, and the wash will be more permanent if the wood afterwards receives a coat of boiled linseed oil or varnish.—*Pharm.Centralh., in Am. Jour. Pharm.*

Erasmus Wilson's Hair Wash.—

Aqua Mellis	½ oz.
Liq. Ammoniæ	½ oz.
Spirit. Rosmarini	1 oz.
Ol. Olive	1 oz.

—*Phar. Jour. & Trans.*

Hop Beer.—

Take of Malt	14 quarts.
Hops	1½ pounds.
Crushed sugar	16 "
Caramel	½ pint.
Potato-yeast	1 quart.

Scald the malt in boiling water and let stand twelve hours; repeat the process, drawing the wort each time. Make an infusion of the hops in a covered vessel, add it as well as the sugar to the malt wort, heat until it is milkwarm, and after placing in a vat or barrel, add the yeast and let stand 24 hours. Then, draw off into a clean barrel and bung tight. This comes as near to XXX ale as anything except the article itself.—*Druggists' Circular.*

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Cologne Water.—A correspondent of the *Druggists' Circular* is responsible for the following peculiar formula:

℞ Lavender flowers, choice.....9 ounces.
Rosemary leaves.....3 "
Nutmegs, crushed .....No. 4.
Mace, bruised .....6 drachms.

Mix, and percolate rapidly with the following menstruum:

Alcohol, deodorized.....7 pints.
Orange-flower water .....1 pint.

To the percolate add:

Oil of Lemon.....9 drachms.
" Orange.....6 "
" Bergamot .....3 "
" Neroli .....3 "
" Rose .....50 drops.
" Cloves .....24 "

Mix, and add lastly:

Pure grape brandy.....12 fluid ounces.

The brandy imparts the œnanthic-ether odor which is necessary to cologne. I am aware, in giving the above recipe, that I have deviated slightly from the gamut of odors given by scientific smellers, but the result of the combination, if properly manipulated, will be superior to most orthodox formulæ published when corn-spirit has to be used. The above should be allowed to stand several weeks before being offered for sale.

Varieties.

Coloration of Chloralhydrate by Oil of Peppermint.—On bringing the two substances in contact, a reddish color is soon developed, which gradually darkens to cherry-red. The color is readily soluble in ether, alcohol, and chloroform; boiling does not destroy it; sulphuric acid heightens its intensity, and, if now chloroform be added, a dark, violet tint is produced. The oils of lemon, bergamot, juniper, crisped mint, rosemary, cloves, anise and fennel do not produce any coloration with chloralhydrate.—*Archiv. d. Pharm.*, 1873, *July* 29, *in Am Journ. Pharm.*

Antidote to Mushroom Poisoning.—Experiments lately made with the active principle of mushroom (muscarine), from agaricus muscarius, show that its effect on the system is the reverse of that of atropine. It causes a great sensibility to light and increase of the pulse, and seems in its action to promise the best remedy for belladonna poisoning, and *vice versa*. Its subcutaneous injection was used.—*Phila. Med. & Surg. Reporter.*

How to Swallow a Pill.—The *Chicago Medical Times* is responsible for the following: "Put the pills under the tongue and behind the teeth, and let the patient immediately take a large swallow of water, and he will

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neither feel the pill nor taste it. In fact, he cannot tell where it has gone, and I have seen them look about the floor to see if they had not dropped it."

DETECTION OF ADULTERATION IN COFFEE.—J. Muller.—In order to ascertain whether ground coffee has been mixed with either roasted corn or amylaceous substances generally, it is only necessary to treat the powder, first with dilute caustic potassa, and, after filtration and addition of a large quantity of pure water, a solution of iodine is added, whereby the starch is detected.—*Chem. News, from Dingl. Polyt. Journ.*

CHILBLAINS.—Mr. Fergus recommends sulphurous acid in this affection. It should be applied with a camel's-hair brush, or by means of a spray-producer. One application of this usually effects a cure. The acid should be used pure. A good wash for hands or feet affected with chilblains is sulphurous acid, 3 parts; glycerine, 1 part; and water, 1 part. The acid will be found particularly useful in the irritating, tormenting stage of chilblains.

PAULLINIA OR GUARANA is a new medicine introduced into Europe from Brazil. It is prepared by the natives from the seeds of the *Paullinia Sorbilis* and *P. Cupana*, climbing shrubs growing on the banks of the river Orinoco. The drug, as found in the market, is in cylindrical or globular masses, of a reddish-brown color, rugose on the surface, very hard, and of a marbled appearance when broken. To use a plain comparison, these cylinders look just like dried-up Bologna sausages. Paullinia contains a large percentage of caffein, more than twice as much as tea, and five times as much as coffee. Tannin also enters into its composition in no small amount. From the presence of these two active principles the medicinal properties and uses of Paullinia are readily anticipated. Its effects upon the system are those of a tonic and nervous stimulant. It is used with advantage in the diarrhœa of phthisis, sick-headache, paralysis, tedious convalescence, and sometimes in irritation of the urinary passages. It is administered in the shape of a powder, mixed with sweetened water, or more conveniently in the form of an alcoholic extract. The dose of the powder is from one to two drachms, that of the extract eight or ten grains during the day. Paullinia is a regular article of trade, obtainable of nearly all wholesale druggists.—*Druggists Circular.*

Registrar's Notices.

LIST OF CHEMISTS WHO HAVE RENEWED THEIR REGISTRATION DURING THE PAST MONTH.

Ault, Edward, Iroquois.
Barker, Robt., Brighton.
Cooke, Fred., Orillia.
Cummines, Thomas, Welland.
Deyell, Robt., Port Hope.
Gayfer, John, Ingersoll.
Hobart, G. S., Kingston.
Lang, G. J. B., Owen Sound.
Lawrence, J. A. R., Hamilton.
Lewis, J. T., Toronto.
Maclagan, Henry, Lindsay.
Nelles, R. A., Duart.
Perrin, S,, Lindsay.
Roberts, C. W., Paris.
Roper, John, Caledonia.

NEW REGISTRATIONS,

Higginbotham, J. W,, Bowmanville.
Hunter, John, Orillia.
Lowry, Martin, Tyrone.

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Drugs, Medicines, &c.	$ c.		$ c.
Acid, Acetic, fort	0 14	@	0 15
Benzoic, pure	0 23		0 30
Citric	1 40		1 50
Muriatic	0 05		0 06
Nitric	0 11½		0 15
Oxalic	0 23		0 27
Sulphuric	0 03¾		0 07
Tartaric, pulv	0 50		0 50
Ammon, carb. casks	0 23		0 24
" jars	0 23		0 24
Liquor, 880	0 25		0 28
Muriate	0 14		0 15
Nitrate	0 45		0 60
Æther, Acetic	0 45		0 50
Nitrous	0 35		0 37
Sulphuric	0 50		0 50
Antim. Crude, pulv	0 15		0 17
Tart "	0 55		0 65
Alcohol, 95 per ct.....Cash	1 60		1 72
Arrowroot, Jamaica	0 16		0 22
Bermuda	0 50		0 65
Alum	0 02¾		0 03½
Balsam, Canada	0 50		0 50
Copaiba	0 90		0 95
Peru	3 75		4 00
Tolu	0 90		1 00
Bark, Bayberry, pulv	0 20		0 22
Canella	0 17		0 20
Peruvian, yel. pulv	0 42		0 50
" red "	2 10		2 20
Slippery Elm, g. b	0 15		0 20
" flour, packets	0 28		0 32
Sassafras	0 15		0 20
Berries, Cubebs, ground	0 20		0 25
Juniper	0 06		0 10
Beans, Tonquin	0 62		1 10
Vanilla	30 00		30 00
Bismuth, Alb	3 40		4 00
Carb.	3 65		4 00
Camphor, Crude	0 38		0 40
Refined	0 45		0 50
Cantharides	2 80		3 00
Powdered	2 85		3 10
Charcoal, Animal	0 04		0 06
Wood, powdered	0 10		0 15
Chiretta	0 20		0 30
Chloroform	1 10		1 65
Cochineal, S. G	0 75		0 90
Black	1 10		1 20
Colocynth, pulv	0 50		0 60
Collodion	0 90		1 00
Elaterium.....oz	3 20		4 00
Ergot	0 35		0 45
Extract Belladonna	1 50		1 60
Colocynth, Co	1 25		1 75
Gentian	0 50		0 60
Hemlock, Ang	0 85		0 95
Henbane, "	1 50		1 60
Jalap	5 00		5 50
Mandrake	1 75		2 00
Nux Vomic.....oz	0 40		0 50
Opium.....oz	1 50		
Rhubarb	5 00		5 50
Sarsap. Hon. Co	1 00		1 20
" Jam. Co	3 50		4 00
Taraxacum, Ang	0 70		0 80
Flowers, Arnica	0 17		0 25
Chamomile	0 32		0 40
Gum, Aloes, Barb. extra	0 70		0 80
" " good	0 40		0 50
" Cape	0 16		0 20
" " powdered	0 20		0 30
Socot	0 50		1 35
" " pulv	1 00		0 00
Arabic, White	0 70		0 75
" powdered	0 60		0 75
" sorts	0 24		0 30
" " powdered	0 42		0 50
" com. Gedda	0 13		0 16
Assafœtida	0 40		0 42
British or Dextrine	0 13		0 15
Benzoin	0 35		0 75
Catechu	0 12		0 15
" powdered	0 25		0 30
Euphorb, pulv	0 35		0 40
Gamboge	1 40		1 50
Guaiacum	0 90		1 00
Myrrh	0 50		0 70

Drugs, Medicines, &c.—*Contd.*	$ c.		$ c.
Sang Dracon	0 60		0 70
Scammony, powdered	6 00		6 50
" Virg. "	14 50		—
Shellac, Orange	0 65		0 70
Gum, Shellac, liver	0 60		0 65
Storax	0 40		0 45
Tragacanth, flake	1 10		1 40
" common	0 53		0 65
Galls	0 28		0 32
Gelatine, Cox's 6d	1 15		1 20
Glycerine, common	0 25		0 30
Vienna	0 25		0 30
Prices	0 60		0 75
Honey, Canada, best	0 15		0 17
Lower Canada	0 14		0 16
Iron, Carb. Precip	0 20		0 25
" Sacchar	0 40		0 55
Citrate Ammon	1 65		1 70
" & Quinine, oz	0 53		0 58
" & Strychine	0 20		0 25
Sulphate, pure	0 08		0 10
Iodine, good	7 50		8 00
Resubliimed	8 50		9 00
Jalapin	1 25		1 50
Kreosote	2 40		2 50
Leaves, Buchu	0 22		0 30
Foxglove	0 25		0 30
Henbane	0 35		0 40
Senna, Alex	0 27		0 60
" E. I	0 14		0 20
" Tinnevilly	0 20		0 30
Uva Ursi	0 15		0 17
Lime, Carbolate.....brl	5 50		—
Chloride	0 06		0 07
Sulphate	0 08		0 12
Lead, Acetate	0 15		0 16½
Leptandrin.....oz.	0 60		—
Liq. Bismuth	0 50		0 75
Lye, Concentrated	1 75		2 00
Liquorice, Solazzi	0 50		0 55
Cassano	0 23		0 40
Other brands	0 14		0 25
Liquorice, Refined	0 35		0 45
Magnesia, Carb. 1 oz.	0 20		0 25
" 4 oz.	0 17		0 20
Calcined	0 65		0 75
Citrate.....gran.	0 63		0 75
Mercury	1 70		1 75
Bichlor	1 50		1 60
Chloride	1 75		1 80
C. Chalk	0 75		80
Nit. Oxyd	1 90		2 00
Morphia Acet	4 45		4 60
Mur.	4 45		4 60
Sulph	4 60		4 75
Musk, pure grain.....oz	25 00		—
Canton	0 90		1 20
Oil, Amonds, sweet	0 40		0 45
" bitter	14 00		15 00
Aniseed	4 00		4 25
Bergamot, super	6 25		6 50
Caraway	3 20		3 50
Cassia	2 50		2 60
Castor, E. I	0 14		0 15
Crystal	0 22		0 25
Italian	0 26		0 28
Citronella	1 25		1 35
Cloves, Ang	2 40		2 50
Cod Liver	1 25		1 50
Croton	1 75		2 00
Juniper Wood	0 80		1 00
Berries	6 00		7 00
Lavand, Ang.....oz.	0 90		1 00
Exotic	1 40		1 60
Lemon, super	5 00		5 50
ord	3 20		3 40
Orange	4 00		4 25
Origanum	0 65		0 75
Peppermint Ang	13 00		14 40
" Amer	3 80		4 00
Rose, Virgin	8 50		8 75
" good	6 80		7 00
Sassafras	0 90		1 00
Wintergreen	6 00		6 50
Wormwood, pure	4 00		6 50
Ointment, blue	1 30		1 40
Opium, Turkey	8 50		8 75
pulv	10 50		10 75

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DRUGS, MEDICINES, &c.—*Cont'd*	$ c.	$ c
Orange Peel, opt.	0 30	0 36
" good	0 12½	0 20
Pill, Blue, Mass	1 30	1 40
Potash, Bichrom	0 23	0 27
Bi-tart	0 33	0 35
Carbonate	0 14	0 20
Chlorate	0 55	0 60
Nitrate	10 50	11 00
Potassium, Bromide	1 10	1 25
Cyanide	0 75	0 80
Iodide	6 75	7 00
Sulphuret	0 25	0 35
Pepsin, Boudault's oz	1 40	—
Houghton's doz.	8 00	9 00
Morson's oz.	0 85	1 10
Phosphorus	0 95	1 00
Podophyllin	0 50	0 60
Quinine, Pelletier's	—	2 45
Howard's	2 70	—
" 100 oz. case.	2 70	—
" 25 oz. tin..	2 65	—
Root, Colombo	0 13	0 20
Curcuma, grd	0 12½	0 17
Dandelion	0 17	0 20
Elecampane	0 16	0 17
Gentian	0 08	0 10
" pulv	0 15	0 20
Hellebore, pulv	0 17	0 20
Ipecac, "	1 50	1 60
Jalap, Vera Cruz	90	1 15
" Tampico	0 70	1 00
Liquorice, select	0 12	0 13
" powdered	0 15	0 20
Mandrake "	0 20	0 25
Orris, "	0 20	0 25
Rhubarb, Turkey	2 50	2 75
" E. I	1 10	1 20
" " pulv	1 20	1 30
" " 2nd	0 90	1 00
" French	0 75	—
Sarsap., Hond	0 40	0 45
" Jam	0 88	0 90
Squills	0 10	0 15½
Senega	1 00	1 10
Spigelia	0 25	0 30
Sal., Epsom	2 25	3 00
Rochelle	0 32	0 35
Soda	0 02½	0 03
Seed, Anise	0 13	0 16
Canary	0 05	0 06
Cardamon	2 25	2 50
Fenugreek, g'd	0 09	0 10
Hemp	0 06½	—
Mustard, white	0 14	0 16
Saffron, American	1 00	1 10
Spanish	12 00	13 00
Santonine	8 25	9 00
Sago	0 08	0 09
Silver, Nitrate Cash	14 85	16 50
Soap Castile, mottled	0 11	0 14
Soda Ash	0 04	0 05
Bicarb. Newcastle	—	6 50
" Howard's	0 14	0 16
Caustic	0 06¼	0 06½
Spirits Ammon., arom	0 35	0 35
Strychnine, Crystals	2 60	2 70
Sulphur. Precip	0 10	0 12½
Sublimed	0 03½	0 05
Roll	0 03	0 04½
Vinegar, Wine, pure	0 55	0 60
Verdigris	0 35	0 40
Wax, White, pure	0 75	0 80
Zinc. Chloride oz	0 10	0 15
Sulphate, pure	0 10	0 15
" common	0 06	0 10
DYESTUFFS.		
Annatto	0 35 @	0 60
Aniline, Magenta, cryst	2 50	2 80
" liquid	2 00	—
Argols, ground	0 15	0 25
Blue Vitrol, pure	0 10	0 10
Camwood	0 06	0 09
Copperas, Green	0 01½	0 02½
Cudbear	0 16	0 25
Fustic, Cuban	0 02½	0 04
Indigo, Bengal	2 40	2 50
Madras	0 90	0 95
Extract	0 30	0 35

DYESTUFFS—*Continued.*		
Japonica	0 07⅞	0 08
Lacdye, powdered	0 33	0 38
Logwood	0 02	0 03
Logwood, Camp	0 02	0 3½
Extract	0 10	0 14
" 1 lb. bxs	0 13	—
" ½ lb. "	0 14	—
Madder, best Dutch	0 13	0 15
2nd quality	0 12	0 1½
Quercitron	0 03	0 05
Sumac	0 06	0 08
Tin, Muriate	0 10½	0 12½
Redwood	0 05	0 06
SPICES.		
Allspice	0 11½ @	0 12
Cassia	0 39	0 40
Cloves	0 30	0 32
Cayenne	0 30	0 35
Ginger, E. I	0 19	0 20
Jam	0 20	0 30
Mace	1 65	1 75
Mustard, com	0 20	0 25
Nutmegs	1 15	1 20
Pepper, Black	0 22½	0 23
White	0 48	0 50
PAINTS, DRY.		
Black, Lamp, com	0 07 @	0 08
" refined	0 25	0 30
Blue, Celestial	0 08	0 12
Prussian	0 65	0 75
Brown, Vandyke	0 10	0 12½
Chalk, White	0 01	0 01½
Green, Brunswick	0 07	0 10
Chrome	0 16	0 25
Paris	0 30	0 35
Magnesia	0 20	0 25
Litharge	0 07	0 09
Pink, Rose	0 12½	0 15
Red Lead	0 07½	0 08
Venetian	0 02½	0 03½
Sienna, B. & G	0 07	0 08
Umber	0 07	0 10
Vermillion, English	1 60	1 80
American	0 25	0 35
Whiting	0 85	0 90
White Lead, dry, gen	0 08½	0 09
" " No. 1	0 07	0 08
" " No. 2	0 05	0 07
Yellow Chrome	0 12½	0 35
" Ochre	0 02½	0 03½
Zinc White, Star	0 10	0 12
COLORS, IN OIL.		
Blue Paint	0 12 @	0 15
Fire Proof Paint	0 06	0 08
Green, Paris	0 30	0 37½
Red, Venetian	0 07	0 10
Patent Dryers, 1 lb tins	0 11	0 12
Putty	0 03⅞	0 04½
Yellow Ochre	0 08	0 12
White Lead, gen. 25 lb. tins	2 50	—
" No. 1	2 25	—
" No, 2	2 00	—
" No. 3	1 75	—
" com	1 30	—
White Zinc, Snow	2 75	3 25
NAVAL STORES.		
Black Pitch	5 00 @	5 25
Rosin, Strained	4 50	—
Clear, pale	7 80	—
Spirits Turpentine	0 58	0 60
Tar Wood	5 50	5 75
OILS.		
Cod	0 63 @	0 70
Lard, extra	0 85	0 90
No. 1	0 75	0 80
No. 2	0 75	0 90
Linseed, Raw	0 75	0 80
Boiled	0 80	0 85
Olive, Common	1 10	1 20
Salad	1 80	2 30
" Pints, cases	4 20	4 40
" Quarts	3 25	3 50
Seal Oil, Pale	0 68	0 70
Straw	0 68	0 70
Sesame Salad	1 30	1 35
Sperm, genuine	2 20	2 40
Whale refined	0 90	0 95

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Original and Selected Papers.

LEECHES, AND HOW I MANAGE THEM.*

BY A COUNTRY CHEMIST.

Do you want to buy any leeches, master? No; but where do you procure them for sale? Such was the question and answer which recently occurred to the writer. The reply received was that they were procured from a large mere or tarn in the centre of Cheshire. The little ragged fellow, for such was my amateur leech merchant, said he waded about the margin of the lake, minus shoes and stockings, on a close warm day, when the leeches fastened on his ankles, and by this simple means he secured them. The lake in question is called Achmere or Lechmere, a corruption of Leechmere. Formerly large quantities of good medicinal leeches were captured in it, and sold to the surgeons and chemists of Cheshire; now, however, the trade has declined. Very few are caught, for the simple reason that sufficient purchasers cannot be found, or the supply might be considerably increased. I cannot detect much difference externally between these specimens and those procured on the Continent, except, perhaps, that they are much smaller.

* From the Chemist & Druggist.

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There are two kinds of leeches recognized by dealers—namely, the green leech (*Sanguisuga officinalis*) and the speckled or brown leech. (*S. medicinalis*). Our native species belongs to the latter. Sometimes it is difficult to detect any characteristic difference between the green and speckled leeches, and by many eminent naturalists they are supposed to be one species. The former is a native of the South of Europe, and is frequently called the "Hungary Leech," from its being extensively exported from that country. The American pharmacists use a very distinct species (*S. decora*). Our officinal leeches may be distinguished by one having a spotted yellow belly, the other is not speckled, but of a greenish yellow.

Leeches are not now so much thought of as in the days of our forefathers. This probably is the reason why we find so little knowledge respecting their habits and employment amongst chemists. If they were more frequently called for by customers, so as to become a profitable branch of the trade, their use and habits would be more studied. The leech, as is well known, is employed only to subtract blood in some local part and in small quantities. The narrowest end or part contains the mouth, the broad and flat end is merely a sucker to hold on to the skin.

The mouth is a triangular aperture furnished with from seventy to ninety teeth, very minute, certainly, but called teeth by naturalists. By means of these the skin is broken, whilst a continual sawing-like motion is experienced when the creature is sucking up the blood. It is thought the mouth keeps open the wound whilst sucking, but this is only conjectural; probably it acts upon the same principle as a sponge. The physician, when ordering his patient to apply leeches, should mark out the exact spot where they are to be placed with pen and ink, for sometimes ignorant persons, especially when applying them to the abdomen, allow them to wander about and suck anywhere, but if the place is marked out they would be more careful. The proverbial impossibility of making a horse drink against its will applies equally to leeches. It is at times difficult to persuade them to bite; even when they are induced it is, perhaps, only for a few seconds, and they wander away again. This may arise from several causes. It may be the blood is so impure that directly it is tasted the leech refuses to suck any more; this, however, is seldom the cause. If the skin is at all unclean it is useless to apply them. The chemist who sells the leeches should be careful to inform the applicant of this fact; it will save much annoyance. The part should first be well sponged with warm water, then rubbed with a little milk. Sometimes it is well just to gently prick the part with a fine needle, or to rub a small quantity of blood over the skin. I have also seen milk and sugar used with good effect. In cold weather, before applying leeches, they should be placed in warm water about 75° Fahr.—if a tablespoonful of beer is mixed with the water all the better—then for a few minutes allow them to

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crawl about over a rough cloth or towel; they will afterwards generally bite very freely.

If they are too lively a good plan is to confine them beneath a wineglass until they are fastened on the skin. Many chemists recommend their customers to purchase leech glasses (tubes); I have found these useful when they are applied in the mouth, but I prefer to work without the tube when applying them to any other part of the body; a wineglass, which is found in almost every house, is all that is required. Persons unused to them do not know the difference between the head and the tail, therefore in using the tubes they are apt to apply the tail end to the skin.

I know it is not an uncommon fraud to sell leeches as virgin or new leeches which have been previously used. Dr. Christison's directions for discovering this deception should be known by every body. He says "the gorging of leeches is a more common fraud than the substitution of spurious species. They are known by being less velvety in their coat, less flat when pressed, and presenting a little tumour when squeezed betwixt the fingers from the head to the tail. Leeches which have been used are often sold for unused or virgin leeches. They are best known by putting them on a white cloth and dusting their forepart with finely powdered salt; in thirty seconds a little blood will be emitted, but not a particle if the leech be quite fresh."

It is not a pleasant thought to fancy a leech is being applied to your skin, which has been sucking some patient in a fever ward of a London hospital.

Of course no reasonable person can deny that leeches, if healthy, can be used more than once; even Christison states he has used them three days in succession without impairing their activity by immersing them in a solution of sugar and water frequently changed. Directly after removing them from the skin they are commonly sprinkled with fine salt on a plate to cause them to disgorge the blood. To me this appears cruel, not only to watch the leech writhing in agony but to observe the skin wrinkled where the salt has touched. I just cover them with brown or raw sugar for a few minutes; afterwards it is well to pass them betwixt the finger and thumb holding it by the tail, then place them in water in which a very small quantity of sugar has been dissolved, and change often for the first week. Working men and others, to whom the expense of leeches is a consideration, should be instructed as above by the chemist when giving him the leeches; they may possibly be required again by his medical attendant, if so it will save him much expense. A good mode of testing the healthiness of leeches is to hold them for a minute or so in the palm of the hand. The best and healthiest specimens will immediately contract into a roundish ball-like form; these seldom fail to give satisfaction.

Frequently it is desirable to draw more blood after removing

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the leech. To do so, hot flannels or linen rags heated and held on the part answer admirably. I have invariably found this the most satisfactory method, far more so than applying hot bran or bread poultices. One thing should not be overlooked, the difficulty in stopping the flow of blood. This seems never to enter the mind of most individuals, yet there are patients met with in every practitioners' experience in whom it is exceedingly difficult to stop bleeding. If a case like this should be suspected when applying the leech, place it if possible and convenient over a bone, where a pressure from the finger will often stop the bleeding. If this will not succeed, moistened matico leaves are useful, or linen rags soaked in a strong solution of alum. When the patient is strong and not suffering from any debilitating illness, the loss of a little blood will not be felt, but in the case of a weak child, or a person reduced by disease, it is often important to stay the flow of blood immediately, or they might be so weakened by its loss as to cause fatal results.

Now a word on keeping leeches. I have heard many of my drug friends complain sorely about the loss from this source. To preserve them without loss and in a healthy state we should strive as closely as possible to imitate nature. How can they be expected to live in a fancy glass jar, exposed in a window, beneath the heat of a summer's sun? When I first entered into business; I ordered from a London firm, a hundred speckled Hambro' leeches, which I placed in a large glass globe, but although they were apparently healthy when received, they soon sickened and died. I do not think I sold a single dozen out of the whole lot. I thought this sort of thing would never pay, so I procured a fancy jar, or aquarium, made on purpose, and advertised extensively. It was to be stocked with *Valisneria spiralis* and other water weeds, water snails, sand at the bottom, etc., but I was still far from successful. At last I became so disheartened that I gave up keeping leeches altogether. I had no sooner so resolved, then naturally the demand increased, and in deference to the wishes of a medical practitioner in the neighborhood, I decided to give the leech trade one more trial. I purchased a large black earthenware jar, with a wide mouth, glazed inside, such as is used by frugal housewives as a pickle jar, only mine will hold nearly two gallons of water. I place at the bottom a layer an inch in thickness, of large pebbles and sand well washed, then I fill the jar about two-thirds with water, hard or spring does not answer so well as rain water. I change the water on an average every fortnight, in the winter season once a month is sufficient, for then the leaches are torpid; I never allow the water to freeze, although it frequently reaches as low as 40° Fahr. The jar is kept in a cool place. I now seldom loose any of my leeches, if the consignment is healthy when received.

I believe the chief cause of failure is exposing them too freely to the light, which excites them. In their native habitat, they live for

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the greater part of their lives beneath the mud at the bottom of the lakes, where they lie in a semi-torpid state; in a dark jar, or where the light is kept from them, they are also semi-torpid.

BROMIDE OF POTASSIUM.*

This article, which has come into general use as a nervous sedative and hypnotic, is too little known for its general properties and effects to be consistent with sound and judicious medical practice. The subjoined facts are a translation by Dr. Ott of Dr. Voisin's prize essay on this salt, published recently in the *Archives Generales de Medicine.*

The article contains the following points:

1. The great necessity of administering it in a pure state.

2. The better mode of administering it is to give it in sweetened water at the commencement of the meal. Care should be taken of the teeth, as bromine is eliminated by the buccal mucous membrane.

3. We should watch the action of this medicine, as bromism can supervene in two different fashions, the slow and rapid form. The slow form annouuces itself by a deathly white color of the skin, especially ot that of the face, by hebetude, stupidity, dryness of the mouth, its mucus becoming pasty, by diarrhœa, considearable meagreness, titubation, profound sleep, a sort of coma, by difficulty of speaking and finding words, by bronchital catarrh which may become suffocating. Bromism comes on rapidly in those who take little exercise. It may be produced in a few days by daily doses of twenty to thirty grains in patients confined to their beds. Exterior temperature does not seem to exercise the least influence on the genesis of it. Bromism appears in patients who have taken for many months or many years of doses from sixty to one hundred and fifty grains, without any assignable reason that it should occur at that moment rather than any other.

The brisk, rapid form presents itself in the following way: In patients who have taken for three or four years of this medicine, in doses of ninety to one hundred and fifty grains, titubation, considerable difficulty in the gait, impossibility of expression, drooping of the eyelids, somnolence, pain in the head, dirrahœa, dull look, stupidity, writing is tremblingly or badly traced, the phrases are written in a mode nearly incomprehensible, because they want portions of entire words. The tongue, at the end of some hours, is red, dry, and broad. The patients are very thirsty.

The treatment of bromism is the immediate disuse of the medi-

*Medical and Surgical Reporter.

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cine, baths of dry vapor, black coffee, purgatives, diuretics, and a very nourishing liquid alimentation.

4. A good sign to determine if the dose is large enough is the absence of reflex nausea caused by introducing a spoon down to the base of the tongue. Iron and arsenic should be frequently associated with this medicine to prevent the anæmia and cachexia produced by it.

5. Duration of treatment. A relapse in epilepsy occur six years after apparent cure, this author considers that in this disease the length of treatment should be at least ten years; although admitting he exposes himself to error in this respect.

6. Accidents which may result from the use of this medicine. Bromism has already been noted. Bromic cachexia. This is characterized by considerable decolorization of the skin, blowing vascular murmurs, languor in the movements and expression, general debility and emaciation. This writer believes that every patient who takes bromide of potassium, in doses exceeding seventy-five grains daily, should be examined by his physician every five days. He considers it a dangerous habit for pharmaceutists to deliver the remedy on a receipe already served. In women who take sixty to ninety grains of the bromide, a dry cough, with difficult inspiration, supervenes, especially in the evening or during repose. The cough resembles whooping-cough. This medicine produces also cutaneous eruptions.

7. Elimination. Elimination by the kidneys does not seem to be greater in infants than in adults. The alimentary canal eliminates little or nothing. The amount excreted by the skin and through the saliva has not been determined. The present facts do not explain the remarkable tolerance of this remedy in infants compared with adults.

8. Therapeutic value. The two most important points in the treatment of epilepsy are the exhibition of it in a proper dose and a continuance of it for long periods. It acts in two different ways, physiologically speaking; one a sedative action on the medulla oblongata and the spinal chord; the other a constrictive action of the muscualar fibres of the capillaries, making the tissues anæmic. The first explains its efficacy in those diseases where the cord and medulla are excited, as in epilepsy, chorea, simple and traumatic tetanus, spinal irritability of hysterical and anæmic patients, etc. Its happy results in spermatorrhœa are due to its capillary constriction. By the same buccal, pharyngeal, vaginal, and probably stomachal secretions are diminished. He relates ninety-six epileptic cases treated, twenty of which have not exhibited any further morbid phenomena.

A portion of the article was in support of the great value of this remedy in nervous diseases, particularly epilepsy. Dr. Brown-Sequard's researches on epilepsy were also referred to as given in one of the lectures by Prof. Agassiz, before the Museum of Com-

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parative Zoology, Cambridge, Mass., last April. "My friend Dr. Brown-Sequard," says Prof. Agassiz, "who has made more experiments among animals than any man living, continuing them upon successive generations, and ascertaining what diseases may be transmitted, has stated facts, some of which almost defy belief. These facts are unpublished. I will give a few of them. He has found that the disease of *epilepsy* can be induced in guinea-pigs by certain operations, and that this disease, being so introduced into the system, may be transmitted from generation to generation, and thus becomes hereditary. Where such operations have produced malformations of the skin, as is often the case, these also have been transmitted; or where the pores have been affected by such operations a peculiarity has been also transmitted. Malformation produced by these experiments as a disease during the life of a parent, has been passed down to the offspring, and even habits arising from disease have been inherited in the same way. These facts have a fearful significance." The value of bromide of potassium and chloral in disease was then discussed.

ACTION OF WATER UPON THE RESINOID PRINCIPLE OF OPIUM.*

BY L. PERIER.

Soubeiran, in his *Traite de Pharmacie theorique et pratique*,† has pointed out that the proportion of water put into contact with crude opium exercises an influence upon the solution of the resinoid principle, oil, and narcotine, but that the resulting modifications of this action are little known. The author has found that at any rate the proportion of water employed plays an important part in the solution of extract of opium, as shown by the following experiments:

(1) 120 grams of extract of opium was divided into two equal parts; one half was treated with 120 grams of distilled water at 15° C., the other half, with 250 grams of water at the same temperature. At the end of six hours, assisted by agitation, solution was complete in both liquids, and they were filtered through paper. The first only left a few bubbles of blackish matter; the second abandoned six grams of oleo-resin.

(2) The first solution was then evaporated to dryness and the product divided into two parts; one was put into a small quantity of water (about twice its own weight), the other into 1000 grams.

* *Bulletin des Travaux de la Societe de Pharmacie de Bordeaux*, xiii., 245, reproduced in the Pharm. Jour. and Tras.

† Fifth edit. (1857), i., 777; seventh edit. (1869), i., 851. Third Series, No. 172.

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After twenty-four hours, the concentrated liquor was quite limpid and without deposit, but the dilute liquor had deposited considerable residue.

(3) 30 grams of extract was dissolved in water, under the conditions prescribed in the Codex (ten times its weight of water at 15° C.). The solution was at first muddy, a black granular precipitate covered the bottom of the vessel; but upon evaporation in a water bath the extract again became homogeneous, and afterwards dissolved in 30 grams without any deposit. In its turn, this solution threw down a precipitate when double its own volume (60 grams) of water was added, and the precipitate was augmented commensurately with the addition of more water. Afterwards, concentration reproduced a normal extract, soluble without residue.

(4) The quantity of water employed gave rise to a regular progression in the phenomena of solution and precipitation. If, for example, five grams of extract of opium were put into ten grams of distilled water, the portion which was first dissolved left in suspension a granular deposit. In proportion as the liquid became saturated this deposit was effaced, until at last no more remained undissolved. The maroon black liquid, a layer of four centimetres of which was impermeable by sunlight, did not require filtering; if it were sometimes scarcely clear yet it did not deposit. With five grams more water a turbidity was manifested which was not completely removed by shaking. At the maximum of 20 grams of water, the deposit commenced; toward 30 grams, and after standing for an hour, the deposit was nearly doubled; at 50 grams (ten times the weight of the extract) it ceased and the liquor was no longer troubled by fresh additions of water.

The whole of the resin however could not be removed by water from solutions of opium. Thirty grams of extract which no longer gave a percepitate upon the addition of water, yielded 2-5 grams of black resin when treated with ammonia. Although in this case the extract was the product of a fourth maceration, the phenomenon occurred, but in a less degree, under ordinary conditions.

It thus appears that the same matter will alternately pass through a filter without residue or leave an enormous residue, according as the quantity of water employed is small or large; also that the precipitation ceases when the weight of the menstruum is about ten times greater than that of the substance. It is even possible to dissolve in a very concentrated cold solution a deposit that has not been obtained from it. Finally, that the heat of a water-bath will restore the homogeneity destroyed by an excess of water, an observation which is not in accord with what has been written by other authors. The constant results obtained during his experiments have induced M. Perier to formulate his conclusions as follows:—

(1) The quantity of distilled water at 15° C. in which extract

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of opium is dissolved has a direct and certain influence upon the partial elimination of the resinoid matter.

(2) Concentrated aqueous infusions of extract of opium do not give any noticeable precipitate, except with the lapse of time; dilute solutions, where the weight of the menstruum exceeds twice that of the matter dissolved give as much more residue as the proportion of water is increased from two to ten.

(3) Water, in whatever quantity, does not percipitate the whole of the resinoid matter; a certain proportion yields only to ammonia.

(4) The residue of extract of opium treated with cold water redissolves in the concentrated mother solution, and heat, instead of aiding in the separation of the resin, oil and narcotine, reconstitutes the homogeneity of the extract.

THE PREPARATION OF LIQUOR BISMUTHI.*

BY C. MEHU.

In the formula given by Mr. C. H. Wood for the preparation of Liquor Bismuthi† there are two equivalents of citric acid ordered to one equivalent of bismuth. I have satisfied myself many times that a single equivalent of citric acid is sufficient to obtain a perfectly stable solution of bismuth. In this manner an excess of citrate of ammonia in the liquor is avoided. The method which I adopt is as follows:

I dissolve an ascertained weight of pure bismuth in three times its weight of pure nitric acid, then concentrate the solution and leave it to crystallize. After one or two days the mother liquor which surrounds the crystals is decanted and evaporated in a porcelain capsule at a moderate temperature, so as to completely drive off the excess of acid; in cooling the liquor forms a crystalline mass. All the crystals being put together, I then pour upon them a concentrated solution of citric acid, made with heat. For each equivalent of bismuth I employ an equivalent of crystallized citric acid, being very nearly equal weights of each. The solution of citric acid dissolves completely the crystals of nitrate of bismuth.

In order to obtain citrate of bismuth I divide this solution of nitrate of bismuth in citric acid into two equal parts, and pour into one of them a sufficient quantity of ammonia to dissolve the precipitate that is formed at first, leaving only a slight excess of ammonia, and then add the other portion of the solution. From this mixture there results a very white precipitate of citrate of bismuth,

* 'Annuaire Pharmaceutique,' 1873, p. 55, translated in the Pharm. Jour. and Trans. Nov. 1873.

† Pharm. Journ. [3] vol. ii., p. 233.

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which I wash with warm water as long as it gives any traces of acidity, and then dry in a stove. The washings are acid and contain a large proportion of nitrate of ammonia, with scarcely any traces of bismuth. This can be isolated in a state of sulphide by means of sulphite of sodium.

The citrate of bismuth so prepared dissolves in ammonia; the solution can be diluted at will with water without becoming turbid, and may be preserved for years. I have examined during two years several solutions of bismuth containing 20 to 50 grams of metallic bismuth per litre without recognizing the least alteration. The solubility of the citrate of bismuth is very rapid and easy; it is only necessary to wash solid citrate of bismuth with a strong solution of ammonia to obtain a perfect sodium too strong for ordinary use.

When the solution of citrate of bismuth in ammonia is evaporated upon plates there is left a white residue insoluble in water, but completely soluble, although rather slowly, in ordinary solution of ammonia.

The citrate obtained by the evaporation of the ammonical solution yields nothing perceptible to alcohol, unless it contain nitrate of ammonia in excess or some other impurity soluble in that menstruum. The solution of citrate of bismuth in ammonia is not rendered turbid by acetic acid, chloride of sodium, chloride of ammonium, iodide of potassium, ferrocyanide of potassium, or bichromate of potash. It is precipitated by oxalate of ammonia, nitric acid, phosphoric acid, sulphuric acid, and nitrate of urea.

THE PRODUCTION OF OPIUM.*

The varied collection of opiums shown at the Vienna Exhibition furnishes a good opportunity for a cursory review of the producing districts of this drug, which is almost solely used medicinally in Europe, while in the Eastern and Mahometan countries, and especially by the Mogul and Malayan races—that is, by at least 700 millions of souls—this narcotic passes into ordinary and extensive consumption.

Commencing, then, with the Turkish Empire, which by its possessions in Asia Minor is with Persia the most ancient seat of production. There almost every small proprietor cultivates the poppy on his land. Some days before the falling of flowers, the capsules or heads of the poppy are scored horizontally with a knife, and that the wall may not be broken, the whole length of the incision is bound round with thread.

The white juice which flows from this cut congeals rapidly in

* From the Chemist and Druggist.

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the air, and assumes a brownish hue. The next day it is removed and laid on poppy-leaves, and when a sufficient quantity has been obtained (a poppy-head scarcely yields the third of a grain), it is made up into little cakes or rolls wrapped in poppy-leaves, and forwarded to market for sale. From 1830 to 1850 the sale of opium was monopolized by the Government, and there were at Smyrna and Constantinople depots where all produced had to be brought and delivered at a fixed price. Since the suppression of this Government privilege all, or nearly all, the opium produced in Turkey enters into commerce by the way of Smyrna, and passes under the name of Smyrna opium. The average annual export is about 400,000 lbs., of which three-fourths goes to Europe and the remainder to North America, where, in the last thirty years, the consumption of opium has nearly quintupled; and to Eastern Asia, especially China, where Turkish opium is sold under the name of kin-ni (golden dirt). The production is very variable, as the poppy harvest is uncertain. Hence the oscillations in this Turkish drug, which, during the last six years, has doubled in price. The cause of this arises no doubt from the increased demand and extended use, as well as the changes of transit routes. The opium of Smyrna is the purest of all which enters into commerce. The best kinds contain from 12 to 15 per cent of morphia, and hence it is more esteemed in European pharmacy. The opium most valued is that of Boghadytsch and Balikesri, after which come those of Kyrkagatsch, Kjutahie, etc. There are shown in the Exhibition ninety-seven specimens of opium. From authentic anaylses, the opium of Halab-Hipar contains 12·55 per cent of morphia, and that of Sinope 12.85 per cent. Persia, which is probably the parent country of the poppy, as well as that of opium, obtains this product from its central provinces, and sends it to Turkey, as well as to the southern and eastern parts of Asia. That of Disful and of Schuschter is renowned, and that obtained at Yezd and the Province of Mazandearan on the Caspian Sea is equally esteemed. The Persian opium rarely appears in commerce in the form of cakes, but usually in cylindrical rolls wrapped in paper. The Russian opium of Derbend (Transcaucasia) is also met with in the same form. This kind is but slightly narcotic, has a very bitter flavor, is of a yellowish brown color, and of the consistence of an electuary, owing no doubt to the admixture of a large quantity of honey.

In British India opium is produced in large quantities, principally in the districts of Malwa, Patna, and Benares. In Malwa the extraction is limited, and in Bengal it is a Government monopoly. The whole is delivered to the State factories, and a special opium agency supervises the cultivation, production, delivery, and transport of this drug. The extraction and preparation of opium in India is different to that pursued in Asia Minor, and the product obtained, judging by the morphia it contains (the true criterion of value) is

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very mediocre, yielding only from 5 to 9 per cent. In India they pierce the capsules vertically with a special kind of knife with several blades; the juice which flows out is collected in a kind of spoon and deposited in earthen vessels, where it separates into a solid mass (the opium proper) and a liquid part of a dark brown.

In the factories the opium is made up of round balls, weighing four or five pounds, which, after becoming dry, are placed in special cases, each holding forty balls, and shipped to China. The Celestial Empire is almost the sole market for opium so prepared. At first the Chinese only used opium as a medicinal agent, but later it came to be a object of general consumption. At the commencement of the last century there were only very small quantities of this drug received in China, probably through the agency of the Portuguese, and the quantity never exceeded 30,000 lbs. But towards the close of the century the use of opium had spread over the surface of the empire, and penetrated among all classes, in spite of stringent measures levelled against its introduction.

The production in India was largely extended, and the importation into China reached unheard of proportions. At the time of the opium war, or at least a few years after, the importation amounted only to 4,000,000 lbs.; in 1867 it had reached 10,000,000 lbs.; and in 1869, the value of the opium imported into China was £10,500,000 sterling. Now this article takes the chief place in the imports into China, and the monopoly of opium brings into the Indian Government a gross sum of £8,000,000 sterling per annum.

However, the official statistics of the opium exports from India in the ten years ending 1870, shows that there was no augmentation on the previous decennial period, but, on the contrary, the shipments are about stationary.

The consumption of opium in China has, however, by no means diminished, on the contrary, the conclusion must be arrived at that the Chinese supplement their supply by other means. The consumption is estimated at over 15,000,000 lbs. per annum. Despite the edicts of the Chinese Government the local cultivation of the poppy is always extending, especially in the southern provinces of Yun-nan, Setschuan, Hounan, and Tche-kiang, where it forms the principal winter crop.

The poppy appears to have been long cultivated in many provinces in China (in 1736 it was grown in a part of Yun-nan), having been apparently introduced from India. Two, and often three, crops are obtained in the year by alternating the poppy with alimentary plants. It has not been without a strong opposition on the part of the Government that the culture of the poppy has been thus extended. Notwithstanding the severe edict of the 28th April, 1865, and confirmed by those of the 21st January, 1869, and December, 1872, this plant continues to replace rice and the cereals. If, however, we may believe a high mandarin, the Government only tolerates the

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indigenous production, with the view of stopping the Indian importation, and if this were accomplished they could readily arrest the local culture.

For smoking, a preparation of opium is used, *min-yang*, of which there exist many qualities, from the finest to the mere residue of the pipes (tie-chan-tao), which is used by servants and the poor. The indigenous opium of China, which appears to be often adulterated with foreign substances, such as the glutinous juice of *Cassia fistula*, is rich in morphia, 6·94 per cent according to Dr. Jamieson, and in narcotine 8·87 per cent. But it is not so much sought after by smokers as the foreign. Of late years, the lower price at which it is sold—less than half—has caused it to interfere materially with the sale of Indian opium.

For Europe, Indian opium has not that importance, seeing that the Chinese pay dearer for it than the best Turkish opium is sold for here, and looking at its smaller percentage of morphia, it could not be employed medicinally.

Turkey in Asia and British India, it is thus seen, are the two grand producers of the opiums of commerce. That which is obtained in other countries is scarcely worth speaking of, although efforts are making to cultivate the poppy in various countries.

Egypt was formerly cited as an opium producing country, and the produce of the environs of ancient Thebes was much in vogue, but it lost its reputation in the European market by arriving adulterated. Endeavors are being made to revive the culture and commerce. At Esneh, Assiut, and Akhmin an opium is obtained which contains respectively 3, 8, 8½, and 10 per cent of morphia.

In Algeria there is a good future prospect for the production of opium, which is found to contain a larger proportion of morphia and less of codeine and narceine than that produced in the centre and north of France. According to calculations made by colonists in the Province of Oran, who have carried on this culture for some years, the mean return from a hectare of land (about two acres) is as follows:

	Francs.
20 kilog. of opium at 30 francs	600
10 hectolitres of poppyseed at 20 francs	200
	800

This return, however, barely repays the cost, for the collection of the opium is troublesome and expensive, and the plant requires a good deal of manure, being considered in India as a very exhausting crop.

In Victoria the culture of the poppy seems to have a chance of success, the opium contains from 3 to 7 per cent of morphia. In North America, especially in the States of Vermont, Illinois, and

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Virginia, endeavors have been made to develop the culture of the poppy for the extraction of opium, but up to the present time the reports as to the results are contradictory, and on the whole unfavorable.

Finally, we come to the European States. Various efforts have been made to produce opium in France, Germany, Austria, Greece, Italy, Switzerland, and Sweden. The most serious and extended efforts were those of France, where M. Aubergier, of Clermont, obtained a fair quantity of opium; and M. B. Roux, at Rochefort. When it is borne in mind that France obtains annually from the poppies, cultivated for their seed only, oil exceeding in value £1,250,000, it is hoped also to add to this some quantity of indigenous opium.

In Germany, opium has been obtained, especially in Wurtemberg and Silesia, which yielded 12·15 per cent of morphia.

These different trials have satisfactorily proved one fact, that Europe is able to furnish an opium equally rich in morphia as the best product coming from Turkey. And if this question so often mooted has not yet attained a satisfactory result commercially, the fault lies chiefly in the greater expense of land and labor which the Eastern nations can furnish so much cheaper.

The subject of opium having occupied so much preliminary space, the consideration of other medicinal plants and pharmaceutical products shown must be held over for another article.

P. L. S.

PATCHOULI.*

Patchouli, or Pucha-pat, is the Hindostanee name of the plant from which the perfume is obtained, which is known to botanists as *Pogostemon Patchouli*. It belongs to the order *Labiatæ*, which furnishes us with so many of our aromatic plants, such as sage, thyme, marjoram, rosemary, lavender, mint, pennyroyal, etc. The patchouli is tall and shrubby, not unlike the garden mint in habit, with broad egg-shaped, opposite leaves, about three inches long, and thick spikes of small purplish-white flowers. It is a native of Penang, Silhet, and the Malay Peninsula, and is imported into England from Hindostan and Bengal. In India it is a very popular perfume, being generally sold in the bazaars, besides being used in tobacco for smoking, and for scenting the hair of women. It was not imported into England until 1844, when forty-six cases, some containing fifty pounds, others one hundred and ten pounds, were put up for sale at Garraway's Coffee House. The price asked was only six

* From the *Journal of Applied Science* in Pharm. Jour. and Trans.

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shillings a pound; but there were no biddings, which proves that its popularity is of but recent date. This lot was brought from New York, to which place it is said to have been taken from China. The plant flowered in Europe for the first time in the winter of 1844, in the greenhouse of a gentlemen at Orleans; since then it has been in cultivation in many botanical gardens, and may usually be seen in the Economic House at Kew. Some years ago genuine Indian shawls could always be distinguished by a peculiar odour which they bore, the cause of which was long unknown. It was, however, at length discovered by the French manufacturers that this odour was due to patchouli, and they imported the plant in order to give articles of home manufacture the same perfume. The smell of patchouli may also be detected in Indian ink, in the manufacture of which it is an ingredient. The dried leaves and tops are the parts imported, and these may be bought in the markets in bundles of half a pound each. Dr. Wallich states that a native friend of his told him that the leaf is largely imported by Mogul merchants, that it is used as an ingredient in tobacco for smoking and for scenting the hair of women, and that the essential oil is in common use among the poorer classes of the natives for imparting the peculiar fragrance of the leaf to their clothes. The sachets of patchouli which are sold in European shops consist of the herb coarsely powdered, mixed with cotton wool, folded in papers. These are simply placed in drawers and wardrobes to drive away moths and insects. The patchouli plant is in great favour with the Arabs, who use and export it more than any other nation. They take up great quantities on their annual pilgrimage, and use it chiefly in stuffing mattresses and pillows. They believe it to be very efficacious in preventing contagion and prolonging life. It is also said to protect clothing from moths. The preparation of the herb is very simple, the tops—about a foot in length—being merely gathered and dried in the sun. It must not, however, be allowed to get too dry, or the leaves will become brittle and crumble in packing. It is recorded that ill effects, such as loss of appetite and sleep, have arisen from excessive employment of patchouli as perfume; and is very probable that such effects would be produced by it on cerlain constitutions. The scent is more powerful in dry than in damp places. The odour is due to a volitile oil, which is contained in the leaves and stems. When distilled, it is yellowish-green, with the same smell as the herb, but neither a burning nor an astringent taste. It is almost as heavy as water. A hundredweight of the plant yields about twenty-eight ounces of oil, or, according to a specimen of the latter in the Kew Museum (where may also be seen the plant in its dried state as imported), one ounce of oil may be obtained from two hundred ounces of the herb. It is from this oil that the essence of patchouli is prepared. In the sachets of patchouli, however, the coarsely-powdered leaves are used.

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REMARKS ON AN AQUEOUS FLUID EXTRACT OF SENNA.*

BY ADOLF G. VOGELER.

There is in the Prussian pharmacopœia a preparation, species laxantes Saint Germain, composed of senna, potassium-bitartrate, fennel and elder-flowers. This tea is much in vogue amongst Germans, who admintster it when a mild laxative is required, but more especially and almost exclusively, is it taken by females, pregnant or during confinement. What makes this "St. Germain Thee" so popular is its gentle mode of operation, being void of any irritating properties, without the repulsiveness of castor-oil, which to a great number of persons is insuperable. But these qualities are only attained by a process peculiar to this preparation, namely: the senna leaves are exhausted with alcohol previous to being mixed with the other ingredient. The apparent object in view in employing alcohol is, to separate from the drug that peculiar resin soluble in alcohol, which is also partially soluble in boiling water but insoluble in cold water, and when administered causes intense griping.

Taking advantage of the knowledge regarding the solvents for this resinous body, some physicians, whenever they have occasion to prescribe senna, advise their patients *not* to use boiling water, but to prepare the "tea" simply by macerating the leaves in cold water for about ten hours; or, if the presence of aromatics is desired, first to steep those and add the senna to the cold infusion.

Being familiar with the above-mentioned method of extracting senna, the idea suggests itself to me that fluid extract could as well be made in this same way.

Accordingly, 16 troy ounces of senna in coarse powder was moistened with some water, packed moderately loose in a percolator, and after 24 hours maceration cold water was gradually poured on till it passed through nearly tasteless. After evaporating the whole, by means of a moderate heat, to the measure of one pint, 10 av. ounces of sugar were dissolved in the liquid, and concentration continued to make it measure 16 fluid ounces.

This I found to furnish an extract satisfactory in every respect. Its odor is most characteristic, color very dark; and under ordinary circumstances from two to three fluid drachms will operate on the bowels, from four to six drachms producing brisk cathartic action without any unpleasant sensation, and above all, its taste can be called almost agreeable. Every druggist is aware how often mothers demand a physic for their little ones; the child will not swallow that nasty castor oil, nor does it like rhubarb, and they want us to "fix them up something nice." So far, I had always been at a loss

* From the Pharmacist.

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to know what to dispense, but now I do not hesitate to give this fluid extract at once, and, so far as known, with general satisfaction.

Last December five pints of the extract were prepared, which kept well in a room of the ordinary temperature till the beginning of summer, when it began to show mould, which, however, after removal was prevented by an addition of one per cent. of sodium hyposulphite. Since the middle of August it has been slowly changing, and at present is in a state of active fermentation. If less sugar were used, and glycerine in the proportion 1 to 8 were added, or if the latter alone was employed, as in the last edition of the pharmacopœia, for fluid extracts, this instability of the preparation might be obviated.

ADULTERATION NOTES RESPECTING TURMERIC IN RHUBARB, AROMATIC CHALK POWDER, AND MUSTARD.*

BY W. L. HOWIE.

Turmeric in Powdered Rhubarb.—The experiments of which the following notes are the result were suggested by the expression of an opinion by many pharmacists of my acquaintance that turmeric was responsible for the brilliant yellow color of certain samples of very fine powdered rhubarb.

The test for turmeric given by Pereira, Christison, and other authorities, and lately elaborated by Professor Maisch, U. S. (*vide* Pharm. Journ., vol. i., 3rd series, p. 1027), requires the preparation of a tincture or decoction of the rhubarb, and is far from delicate owing to the difficulty of detecting the brown-red tinge in presence of the deep yellow color of the rhubarb. My aim has been to supplant this preliminary exhaustion of the suspected rhubarb by a process which should more completely eliminate the curcumine, and while rendering the test strictly practical for counter use, improve its efficiency.

An effort to discover a menstruum in common use which would dissolve the coloring principle of one only of the drugs under notice proved not altogether successful, in a measure owing to a variation in the peculiar constituents of different varieties of rhubarb, which will be further referred to.

Of turpentine, carbon bisulphide, benzole, ether, and chloroform, I have been induced to prefer the last-named, though the test can be applied with either of the others, should convenience suggest such a course; but, with the exception of ether, none seems so efficient

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as chloroform, on account of the readiness with which it dissolves curcumine, and its volatility, rendering the manipulation of a number of samples exceedingly rapid.

I discard ether, because crysophanic acid is much more soluble in it than in choloroform.

The application of the test is as follows:

Let the required number of pieces of white blotting-paper, about three inches square, be numbered and placed on a pill tile or glass slip; in one corner of each of these papers place about five grains of the several rhubarb samples to be tested, keeping the powder as much together in one heap as possible; press it flat and smooth with the aid of a piece of paper, and drop cautiously on the centre of the powder, chloroform, so that it may slowly percolate to the circumference, carrying with it any soluble matters, and extend nearly one inch from the powder, taking care not to float any particles over or under the paper, which would interfere to some extent with the succeeding tests. Having allowed the papers to dry, it will be found that a yellow stain of varying intensity has been left around the powder. With really fine, bright-colored East Indian rhubarb, this stain is scarcely perceptible, but cheaper and darker samples may yield a brilliant yellow, while even the finest bright-colored English powder will give a yellow stain as deep, and in most cases, deeper, than the darkest East Indian. Should turmeric be present in quantity in any sample it will at once give a brilliant yellow stain, in tint undistinguishable from that of the rhubarb, but which may readily be identified by the following tests.

Place a minute pinch of biborate of soda in powder on that portion of the paper over which the chloroform had extended, and which probably has a yellow tint, choosing the deepest colored part. With a glass rod deposit a single drop of hydrochloric acid over the borax. In a few seconds, should turmeric be present, a distinct red will be produced, which is changed to black or greenish black with solution of potash, but no change except a slight bleaching, takes place if the yellow is caused by rhubarb colors only. A drop of solution of potash instantly changes the yellow stain of turmeric to a more or less brown tint, while a pure rhubarb gives a bright reddish-purple color.

For delicate operations, a saturated solution of boracic acid is preferable to the powder borax, so that any obstruction of view by the white powder may be obviated; but it is necessary in either case to use hydrochloric acid, which quickens and intensifies the action of the boracic acid.

By this means turmeric can readily be detected in rhubarb containing only 0·05 per cent. While 0.1 per cent., or seven grains in one pound of rhubard, gives at once distinct and unmistakeable evidence of its presence.

As turmeric often carries in its train wheaten flour or farina,

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which can be best identified under the microscope (*vide Pharm. Journal*, vol. ii., 3rd series, p. 841), rhubarb in which it is found should always be looked upon with suspicion.

It is gratifying to be able to state that of some thirty-six samples procured in different parts of the United Kingdom, only in one have I found turmeric; and strangely it was in a specimen of the old time Turkey, which a friend had carefully stored as a curiosity. The quantity present, however, was so small, about 0·07 per cent., that it could hardly be called a wilful adulteration, and may be accounted for when we remember that it is, or was, the practice of some dealers to rub the roots with turmeric to improve the color. Some such roots had no doubt been used in this instance for powdering.

That no one may be deterred from testing every parcel of rhubarb before taking into stock, I have only used chemicals found on the shelves of every pharmacy, and may just add that five samples may be tested in as many minutes, leaving no apparatus soiled but a glass rod and pill tile, and at a cost of a fluid drachm of methylated chloroform.

European in East Indian Rhubarb.—The observation of the regularly varying depth of tint of the yellow stain on paper, given by different rhubarbs with chloroform, suggested this test as a useful and ready means of determining not only the absence of turmeric, but also the quality of the drug.

East Indian rhubarb, sound, pale in color, dense, and freed from the cortical layer, when reduced to powder gives up almost no color to chloroform. A dark-colored but otherwise sound piece gives but a slight tint, while the cortical layer gives a more distinct yellow, as does in a yet more marked degree the interior of such pieces as are worm-eaten and rotten.

English indigenous rhubarb even when carefully selected gives a deep yellow tint, which is yet more intense from cortical and faulty pieces.

French indigenous rhubarb which sometimes appears in commerce in this country (*vide Pharm. Journal*, vol. ii., 3rd series, p. 1009), though in external appearance and density greatly superior, is in therapeutic value and chemical characteristics much like our own native root, and gives up about as much color to chloroform.

Of the character of the stain given by inferior or false rhubarbs, excepting its intensity, as compared with that produced by fine East Indian root, I have unfortunately been unable to distinguish any peculiarity such as would lead to its unfailing detection; still the constancy of the variation, according to the kind of rhubarb used, is such, I think, as ought to give a reliable index of quality.*

* NOTE.—Since reading the above we have so far modified this test as to obtain a quantity of the colored solution from each of the varieties of rhubarb, and have examined the liquids by a train of five prisms in Browning's direct vision spectroscope, but except a slight difference in the extent of absorption caused by the varying intensities of color of the liquids, there is no recognizable difference.—ED. CAN. PHARM. JOUR.

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A powder offered as East India rhubarb, of pale brilliant color, having the usual characteristics of that variety, should give but an exceedingly pale yellow tint. Should a deep yellow be given I would suspect English or French contamination. An East Indian powder of a dark hue however may give almost as deep a color as English, and still be genuine; though by this color I would judge it was the product of unpicked roots, trimmings, or even worm-eaten pieces, according to the depth of tint.

The few specimens of Turkey rhubarb I have been enabled to experiment upon, through the kindness of several friends, yield results like East Indian.

The cause of this varying color yielded by different rhubarbs is somewhat obscure, the chemistry of the drug being as yet far from satisfactorily elucidated. Chloroform seems to dissolve out chiefly the resinous principles erythroretine, phæoretine, (and aporetine?) which exist in varying quantity in different parts and varieties of root, while the chrystalline principles chrysophanic acid and emodine are left behind.

Beautiful aggregates of granular crystals of chrysophanic acid may be easily obtained by percolating ether after chloroform through East Indian rhubarb, and allowing the ether to evaporate spontaneously. It is noteworthy that English and French rhubarbs treated thus yield no such crystals, the residue being a minute quantity of pale brown gummy extractive; though from all varieties distinct brownish acicular crystals, probably emodine, will be observed on the sides of the evaporating basin.

It may be suggested that chrysophanic acid which is recognized as the chief principle of rhubarb, by continued exposure to atmospheric influences, absorbs oxygen and is converted into what is at present known as the resins erythroretine and phæoretine, which some have not accepted as distinct principles, but assert to be "nothing but impure chrysophanic acid" (Batka). Being thus changed in the exterior insect-perforated and spongy portions of the root into amorphous resins soluble in chloroform, we may trace in imagination the cause of the deep yellow stain given by deteriorated roots.

The formulæ slightly bear out this theory, that of chrysophanic acid given by Rochleder and Heldts, who seem to have obtained it from the lichen *Parmelia parietina*, is $C_{10}H_8O_3$, and that given by Thann, who procured it from rhubarb, is $C_{17}H_{10}O_2$, while that of phæoretine is stated as $C_{16}H_{10}O_7$, and erythroretine $C_{19}H_{18}O_7$ by Gmelin, whose formula for chrysophanic acid is $C_{14}H_{10}O_3$ (altered to new notation).

Chrysophanic acid gives with caustic alkalies a red color, and erythroretine a bright purple, as may be observed on touching the yellow rhubarb stain with solution of potash.

With a substance such as rhubarb, varying in chemical as well

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as physical characteristics, great care must be exercised before pronouncing definitely upon any test for distinguishing between the varieties, depending upon such a minute difference as depth of tint. While putting forward this method of identifying European in presence of fine Eastern grown rhubarb with some degree of confidence, having found unvarying results from the examination of well-nigh one hundred specimens, it is much to be desired that others would take up the subject and confirm or discredit the results I have obtained.

It is necessary that daylight be used in following these tests, as gas or other common artificial light being yellow, the delicate tints are thereby rendered invisible.

Turmeric in Aromatic Chalk Powder.—As with bright-colored rhubarb so it is not uncommon to hear turmeric suggested as the cause of the fine yellow color of some makes of aromatic chalk powder.

This and other powders containg saffron may be tested in exactly the same manner as above directed for rhubarb. Polychroite, or crocine, the coloring principle existing to the extent of 50 to 60 per cent. (Pereira) in hay saffron is quite insoluble in chloroform, which only dissolves out a small quantity of yellowish oil. Aromatic chalk powder should therefore give no yellow stain with chloroform, a very small proportion of turmeric will thus be at once detected.

The saffron yellow, which may be obtained by using alcohol instead of chloroform, unlike that of turmeric, is changed to green by concentrated nitric acid, and to indigo blue, fading to dirty red and brown, by sulphuric acid.

Turmeric in Mustard.—In "mustard condiment" turmeric will be found by the same process, though like the gilding on otto bottles, it is generally expected, and not so likely to disturb a proper estimation of the quality; besides, it seems to serve an important purpose in keeping the article presentable for a week or more after being made, while a pure flour soon becomes unsightly, and has to be renewed for table use almost daily.

Mustard branded "genuine" should contain no turmeric.

Other applications of the principle involved in this test will no doubt suggest themselves to many pharmacits.

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CHINESE MEDICINES.

Some time ago we announced the coming publication of a work on the Materia Medica of the Chinese, by M. M. Soubeiran & Thiersant. At that time we gave a short abstract of the contents, and are now enabled to give a more extended notice, for which we are indebted to a review in the *Chemist & Druggist*.

The authors have combined their labors, in order to make better known the therapeutic agents, and indirectly the medical ideas of people who have remained stationary in this respect, although advanced above others in science, industry, and the arts. It is not the first time that this subject has been broached, thanks to the zealous labors of medical men and naturalists. In this special class of literature, among others who have contributed of late years much useful information, are Messrs. Tatarinov, Porter-Smith, O. Debeaux, and especially Daniel Hanbury. But useful as these contributions have been, they were only, after all, essays more or less advanced and successful, owing to the special difficulties inherent to this class of investigations.

The difficulty of identifying the medicinal substances used in China has arisen from their being so much mixed and altered in appearance by successive decoctions in different liquids, or reduced, if not into powder, at least into such small fragments, that they were scarcely recognisable. The scientific determination of these various therapeutic agents would have been impossible, unless they had availed themselves of the labors of their predecessors, and added the special knowledge locally acquired by one of them by a long residence in China. One is struck, in scanning this work, by its similarity to early European work of this class; for all the principal medicinal substances used by us seem to be known and employed by the Chinese, and one might almost fancy he had before him the Materia Medica of Geoffrey, on one of the olden treatises in which early scientific research, not sure of its facts, does not disdain to collect and publish, conjoined with its own observations and prejudices, the medical errors and popular superstitions of the time. But with all the follies and superstitious opinions held of the virtues of many substances, their practitioners have evidently a thorough knowledge of the uses of some of the most important natural and artificial medicines. They use all the common mineral and vegetable astringents and febrifuges. From time immemorial they have used mercurial preparations in syphilis, arsenic for strumous afflictions and intermittent fevers; iron, as a strengthener; nitrate of soda, as a diuretic; carbonate of lime, as an absorbent, etc.

They use, as we do, sulphur, acetate of copper, castor oil, aloes, rhubarb, aconite, veratrum, colchicum, camphor, musk, and opium. They have stimulatories, anthelmintics, and others analogous to

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ours, and are in possession of substances capable of preventing or removing the effects of intoxication, among which are named *Betonica officinalis*, *Novenia dulcis*, *Chrysanthemum album*, nutmegs, and borax. What is more remarkable, anæsthesia, general or local, is of very ancient employment in China. One of their great surgeons describes a species of Atropa, which produces insensibility sufficient to allow of serious operations being performed on the lower part of the stomach. There are some plants, of boasted reputation in the extreme East, which at least deserve being put to the test by experiments on animals, and a severe clinical examination. Among these are *Anemarrhena asphodeloides*, employed for the same use as squills; *Pardanthus chinensis*, to which are attributed most remarkable and varied properties; *Pupalia geniculata*, the bitter root of which is used in cases of rheumatism; *Passerina chamædaphne*, a tincture of which is employed as a soothing tonic and febrifuge; *Rehmannia chinensis*, useful in cases of general debility; *Dimorphantus edulis*, frequently prescribed in cases of loss of blood, heart disease, etc.; *Gynocardia odorata*, the seeds of which are used in skin disease and for syphilis. Among febrifuges, *Tournefortia argusina*, *Tricosanthes dioica*, and especially *Dichroa febrifuga*, which has a high reputation in Cochin China, and merits, perhaps more than the others, the title of a substitute for quinine.

In running over the articles used medicinally by the Chinese, there appear to be 110 derived from the mineral kingdom, which are alleged to have useful properties; 89 from the animal kingdom; and 676 from the vegetable kingdom. Space would fail us to go into full elaborate enumeration of the specialties which are new in the vegetable kingdom.

Some of the animal medicines are curious. For instance, torrefied human hair is administered in pills. The urine of women and children is considered to heal abscesses and absorb tumours. The urine of young infants is collected, and after adding sulphate of lime, or common salt, evaporated in crystalline cakes, which are given in cases of debility, gonorrhœa, affections of the kidneys, etc. After confinement the urine of a child of four years is administered to the woman, with the view of aiding nature to expel the impurities accumulated during pregnancy. The excrement of the bat has a high therapeutic reputation, and is applied to ulcers, and administered in cases of ophthalmia. The paws of the bear and its gall are much esteemed, being considered anthelmintic, and useful in affections of the liver and abdomen. The scales of the pangolin (*Manis javanica*) are considered remedies against the itch, and in cases of ulcers, buboes, and hæmorrhoids. The itch is very common in China, and the scales, fixed in a bamboo handle, are used for scratching. Castoreum is employed in the form of pills or tincture, in nervous affections and weakness of the genital organs. But the kidneys of an old dog are sometimes substituted for castor. The excrements of

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almost all animals torrefied, such as those of the camel, goat, bat, etc., appear to be used medicinally.

The deer, of which several species are found in China. occupies an important place in their Materia Medica, the flesh, blood, horns, nerves, and marrow being all used. The young budding horns, especially those taken at the last quarter of the moon, when they are still soft, and filled with blood, are considered a sovereign remedy in poverty of the blood, and are especially recommended to those of sedentary occupation, and convalescents. They are also administered to women subject to miscarriages. The high price which these fetch cause an active chase to be carried on, to obtain them in Formosa, Sse-tchuen, Chen-si, Chanson, Pe-tchi-li, and other districts. One of the species of deer is *Elaphurus davidianus*, of Milne Edwards. These young horns, according to Huc, sell for as much as 150 ounces of silver. They are prepared with the vapor of spirit, and certain aromatic herbs. A species of skunk is used in medicine, in cases of suppression of urine, gravel, and hæmorrhage. A curious use of the gecko is as a test of viriginity. It suffices to place on the hollow of the hand of the female suspected a little of its blood, and then to plunge the hand in water; if the blood falls off it is a certain sign that the girl is not a virgin! The flesh and skin of various snakes are used medicinally, but the head and tail are removed, under the impression that poison is lodged in these. Various virtues are attributed to serpents; they are considered efficacious against rheumatism, leprosy, paralysis, ulcers, ophthatmia, and fevers. Several frogs and toads are also employed. The hippocampus has the reputation of aiding accouchements; it suffices to hold one of these little horse-fish in the hand to cause the expulsion of the fœtus.

A number of both marine and river shells are calcined and pounded, and used in cases of fever, apoplexy, and hæmorrhage. Cuttle-fish bone is considered styptic and anthelmintic. Pulverized, it is a domestic remedy for stopping the blood in cuts or wounds.

Mylabris cichorii is collected and dried, and employed as an emetic, diuretic, and antidote to poison, and also to promote abortion. But its most vaunted use is as a remedy for hydrophobia. Although it contains a third more cantharidine than the ordinary blistering fly, it does not seem to be used in China for vesicating purposes.

The silkworm and its products seem to enjoy a high repute, for the dead moth is used medicinally as an aphrodisiac and antileucorrhic. The caterpillar, torrefied, is administered in inflammation of the throat. The chrysalis, the cocoons, and the excrements of the worm are also employed. Raw silk is specified in some cases, and an empyreumatic oil of silk was formerly used.

The larva of the grasshopper, roasted, is pulverized, and made into pills, which are given to children in fevers, if troubled with

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worms. The bodies of the grasshopper, stripped of their feet and wings, are sold in large quantities in autumn to the druggists by the peasants. They are employed in cases of sterility, impotence, menstrual disorders, lumbago, etc. Mixed with olibanum, arsenic, sal ammoniac, and rice flour, they are applied to strumous abscesses; and have also a high reputation is cases of hydrophobia.

The larva of the common meat fly (*Musca carnaria*) are collected from putrid carcases, roasted, and employed as medicine, being given to consumptive or scrofulous children The *Scolopondre morsitans* is employed as an anthelmintic. They are collected about the houses, dried, and mixed with rice spirit, and are said to be an infallible remedy for worms. The European scorpion, when roasted, is employed in apoplexy and tumors of the stomach, etc. It enters into the composition of a celebrated tincture, which is considered useful in all sorts of maladies, even the most dangerous.

Finally, we may state that the work has an added interest, from a good Chinese and French vocabulary appended, which will be found very useful for reference; and there is also a well-arranged classified table of contents.

Syrup of the Bromide of Iron.—Take of bromine three troy ounces; iron (in the form of wire) 350 grains; distilled water, three fluid ounces; citrate of potash, six troy ounces or q. s.; syrup, a sufficient quantity. Put the iron, with the distilled water, in a flask, and add of the bromine two troy ounces in small portions at a time, allowing the mixture to cool, if necessary, before the addition of each fresh portion. When the odor of bromine has disappeared, warm the mixture gently, until it assumes a green color; filter and add the remainder of the bromine. Transfer the resulting solution of ferric bromide to a porcelain mortar, and add gradually, with constant trituration, citrate of potash, until the color of the mixture changes from brown to green; finally, add simple syrup to make up thirty fluid ounces. The syrup thus prepared corresponds nearly in strength with the syrup of the iodide of iron, and may be administered in doses from twenty to thirty drops. It is elegant in appearance, not disagreeable in taste, and is not incompatible with alkalies or with tannic acid.—*Med. and Surg. Reporter.*

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Editorial.

EXAMINATION OF ASSISTANTS.

The relations of pharmacists to each other, and to the public generally, have, by the Pharmacy Act, been adjusted in a manner which has proved satisfactory to all concerned. There still remains, however, a matter of almost equal importance, which, though neglected, has not been lost sight of, but simply awaits a suitable time and opportunity for settlement. We refer to the insuring of adequate competency on the part of assistants.

To every one who has given the subject a little thought, it must have appeared inconsistent that the proprietor of a pharmacy should be subjected to examination, in order that his competency be guaranteed, while his assistant, or assistants, who perform the greater portion of the work, and through whose operations the principal risks to life or person occur, should go unquestioned, and their qualifications be altogether disregarded by the law. The proprietor may be careful to a nicety, and have a thorough knowledge of his business, while the assistant may possess no more of these qualities than is sufficient to enable him to pass muster before a master whose attention may be fully occupied by other business, and who, at best, cannot be expected to be cognizant of all the details of work which his servant may perform.

It may be said that a careful and conscientious master would not retain in his employ a servant of this character. This may be conceded, but, at the same time, it will be necessary to remember that, in order to fully understand the capabilities, or faults of a servant, considerable time and close observation are required; and, even then, an artful employee may, for a longer or shorter period, evade the scrutiny. In most instances, assistants are engaged on the strength of their own recommendation, or that of their friends, and, in the event of incompetency being revealed, it may not always be convenient or possible to break these engagements. By subjecting assistants to a sufficient examination, before a disinterested board, these evils and inconveniences would be much lessened, if not altogether done away with, and druggists would soon realize the ad-

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vantages of employing those of guaranteed competency, thus relieving themselves of much responsibility, uncertainty, and in many cases, pecuniary loss.

There is another aspect in which this phase of the subject may be viewed. Under existing circumstances, a master is responsible for the faults of his servants; and many a druggist has been made to realize the force of the rule. In some countries where the law in this respect is rigorously administered, pharmacists are often brought to complete ruin by the mistakes of their assistants. We often hear of such cases, and although their occurrence in Canada may be very rare—as actions for damages are seldom instituted, and a death more or less is regarded as no great matter—yet the druggist often feels the more indirect results of loss of trade and reputation.

It is manifestly unjust that one person should be made to suffer for the faults of another, and we feel confident that, as far as druggists are concerned, the burden will never be placed upon the right shoulders, until, by subjecting assistants to examination, and declaring them legally qualified to practice pharmacy, we make them individually responsible for their actions. It is possible that this result might not be, at once, realized, but the initiatory step would be taken and legislative action would, in all probability, soon follow.

We have, so far, only considered this subject from a single standpoint—that relating to the individual and more direct interests of pharmacists. This is decidedly the weakest side of the question, the general welfare and safety of the public outweighing all other considerations. It is evident that the reasons which have been adduced in favor of one side of the question are equally applicable to the other—the assistant is the servant of his master and also of the public, and it is to the interest of both that the servant be a competent one. Vastly superior, however, are the claims and demands of the public; as much more important as are the considerations affecting life over those of property. The mistake of a clerk may, indeed, prove the ruin of his master, but this is its utmost limit; it is the patient who alone is made to feel the worst calamity that can befal.

It is needless for us to urge further the rights of the public in this matter. Our readers are well acquainted with the subject, and we doubt not, when the time comes for these rights to be recognized, will do their utmost in furtherance of that which so deeply affects the general welfare.

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Viewing this subject as related to the cause of pharmacy, and to the interests of pharmacists as a community, there is nothing which would so materially tend to their advancement as the education of the younger members of the profession. It is to the assistants and apprentices that we look forward for a full realization of the result of our labors, and we are glad to say that, even under existing regulations, there are favorable indications of future improvement. A few years ago it was impossible to maintain a well-attended class on any of the subjects of pharmaceutical study. Fees for attendance were not so much as thought of, and we question whether students could have been made to attend even were they themselves paid for it. We are glad to state this state of things has changed. At the present time we are aware of a number of young men—some of them who have left their situations in the country and are attending lectures in the colleges of this city—who are devoting themselves to the study of pharmaceutical science; and are giving their entire time and energies to this object. While, however, there are a few who are led by the dictates of a commendable ambition to qualify themselves for the position which they intend to assume, there are many others who will make no effort whatever. For these there is nothing but a compulsatory examination whose requirements shall necessitate an acquaintance with the various branches of study which an assistant must understand ere he can hope to raise himself above the standing of a common grocer's clerk. It is easy to see that this elevation of the standard of education will have a direct and beneficial effect on the social and professional standing of assistants, as well as on their pecuniary interests. A man whose competency is guaranteed can always command for his services a higher remuneration than one whose qualifications are, at least, questionable. The difficulties to be surmounted, and the ordeal which would have to be passed, would deter many persons from selecting any occupation beset with such obstacles. This would materially lessen the supply of labor and, as a natural consequence, better salaries would be realized, while the overstock of incompetent and half-fledged druggists with which the market is generally glutted would soon entirely disappear.

We understand that the Committee on Legislation, to whom the amendment of the Pharmacy Act is intrusted, intend introducing a section which will cover the ground of which we have been speak-

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ing. The precise form which this amendment will assume has not yet been decided, but as soon as the details transpire, an opportunity will be afforded for their discussion through the pages of the Journal.

CITRATE OF MAGNESIA UNDER DIFFICULTIES.

English druggists have been thrown into a state of great excitement and consternation by the recent prosecution of one of their number for selling, as citrate of magnesia, the ordinary granular effervescent salt of commerce, which, on analysis, was found to be altogether devoid of the base indicated. The circumstances are, briefly, as follows :—The Sanitary Inspector of Bermondsey, called at the shop of a druggist, residing in that district, and presented an order, or prescription, for "Magnes. Cit. Effervescens, ℥iv." The druggist, being out of the article, procured a supply from a neighbor. From this, the Inspector's prescription was filled, and that functionary went on his way rejoicing, not however to test upon his own system the beneficial effects of so grateful a remedy, but, with malice aforethought, to hand over the medicine to the district analyst in order that its chemical shortcomings might be revealed. It is needless to say that analysis failed to show a trace of magnesia. The druggist was therefore summoned, under the Adulteration Act, and, after the hearing of evidence, was required to pay a penalty of ten pounds sterling, together with the costs of the analysis; besides being obliged to listen patiently to a lecture by the presiding magistrate on the enormity of the offence committed.

It may well be conceived that this decision his aroused the indignation of the British pharmacists, and also given rise to a general feeling of uncertainty and alarm throughout the trade. This arises not only in regard to the decision as specially applied to citrate of magnesia, but to the principle involved, that a chemist ought to be thoroughly acquainted with the character and quality of the articles in which he deals; that ignorance of the composition of any article cannot, perhaps, be urged as a plea, nor can the responsibility be placed upon the manufacturer or wholesale dealer. The tone of the English journals is decidedly to the effect that this case may be regarded as a test, and

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that the druggist prosecuted was made the scape-goat. It is to be regretted that the pecuniary circumstances of the unfortunate defendant are not such as would warrant him in continuing legal proceedings; but despite this, we think that the matter will not be allowed to rest here, and that either the Pharmaceutical Society of Great Britian, or a combination of wealthy and influential manufactures or dealers will see that the case is carried to some more definite issue than that depending on a magistrate's decision.

At the meeting of the Pharmaceutical Society held Nov. 5th this case was discussed, at great length, in all its bearings. At that time, it did not seem probable that the Society would take action against the decision. It was thought that such a course would compromise the dignity of the organization and bring it to the level of a Trade Protection Society. One impression seemed general—that the name of the granular effervescent citrate of magnesia must be changed to something more nearly approximating to truth and correct nomenclature. Many names were suggested but none finally decided on. The pharmacopœial designation, *Sodæ Citro-tartras Effervescens*, appeared to be regarded with most favor. It was very properly urged that the public would not recognize this name, and, to meet this, a note explaining the change would have to be appended to each label.

Mr. Bishop, the originator of the granular salt, was present at this meeting. He made a very satisfactory statement that though the compound sold by the defendant in the case referred to was not of his (Mr. Bishop's) manufacture, yet as he had been the originator of the preparation he would stand by his offspring and would see that the defendant in the suit was at no pecuniary loss. Mr. Bishop had resolved to change the name of his preparation, in all probability calling it, "Citro-tartrate of Soda with Magnesia" some salt of the latter base being present.

As far as our own convictions are concerned, we cannot confess to any sincere regret at what has occurred, although we sympathize with the pharmacist who has been made to suffer for the combined offences of a community. The matter might, certainly, have been better arranged, put in a less offensive form, or been made to rest upon the shoulders of a more deserving sinner, but, as the blow has been struck, and as it has been levelled at the flagrant representative of a system the existence of which all conscientious pharmacists must deplore, we see no great reason to complain.

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As citrate of magnesia, the commercial salt is a falsity and a humbug, and if the public have been ten or fifteen years in finding out this interesting fact we can only blame them for their obtuseness. The trade in this salt has been built upon the reputation of another article. People had a high opinion of the virtues of magnesia, a compound bearing that name was prepared for them, they eagerly received it as citrate of magnesia, while, in reality, they have been taking a compound, which, in most instances, contains no magnesia, or at best, a trace of Epsom salts, and differs little from flavored soda powders.

We, as a community of pharmacists, have tolerated and perhaps upheld this state of things, while, at the same time, we have been advocating a high standard of trade morality, and discussing nice points of nomenclature—whether, for instance, *Magnesiæ citras* would not be more correctly rendered *Magnesii citras*. Truly we have been straining at a gnat and swallowing a camel, and it is no more than we deserve if the meal proves indigestible.

NEW SOURCE OF INDIA RUBBER.

Although it has long been known that the milky juice of the common silk-weed, *Asclepias Cornuti*, contains a proportion of caoutchouc, and though thirty years ago Shultz announced this constituent to exist in notable quantity, yet, until lately, we were not aware of any practical advantage having been taken of the fact. We understand, however, that, a short time ago, this subject attracted the attention of some gentlemen residing in the western portion of this province, and that, on the strength of preliminary experiments, a company, having an authorized capital of $100,000, was formed at London, Ont., for the purpose of carrying out this new and promising branch of manufacture.

So far the undertaking has not passed the experimental stage, as the company are desirous of ascertaining the best methods of manufacture, and the probable extent of the business, before encroaching largely upon their capital. At the outset, a call of five per cent was made, and the result of the experiments made was so encouraging as to warrant a farther call of five per cent for the purpose of continuing these experiments on a more extensive and practical scale.

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In a late experiment, one thousand pounds of milkweed were operated upon, and this quantity was said to yield about four per cent of caoutchouc. The process consisted in subjecting the plant to partial decomposition, heating by steam, and then treating by maceration with coal tar naphtha. The benzine, holding the caoutchouc in solution, was then distilled, when the rubber was finally obtained in a solid form. Of the benzine about eighty per cent was recovered.

The rubber so obtained possesses all the ordinary characteristics of pure caoutchouc, and in its solubilities, is identical with that substance. The company have, of course, protected their manufacture by patents; and we understand that in the United States, if not in Canada, patents for applying the process of vulcanization have also been obtained. The original patent does not apply exclusively to milkweed, but is extended to other caoutchouc-bearing plants, as the bamboo-berry, flax seed, &c.

A curious fact is stated in regard to the benzine recovered by distillation from the plant mentioned. While, in its original condition, benzine is exceeding inflammable and explosive, it is said that it loses the latter property, after distillation, and, in regard to the former, is so modified as to be easily manageable; so much so that the company intend offering it for sale as a new burning fluid. Perhaps some of our readers can account for this change of properties.

OBITUARY.

FREDERICK CRACE-CALVERT.—This well-known chemist died on Friday, Oct. 24th, at his residence Newton Heath, England. The immediate cause of death was ulceration of the lungs; but it appears that when at Vienna, as juror in the chemical department, he was seized with typhoid fever, from the effect of which he never thoroughly recovered.

Dr. Crace-Calvert was, at the time of his death, about fifty-four years of age. He was born at London, and was the son of Colonel Crace, who, on marriage, had assumed the surname of his wife. Dr. Crace-Calvert received his education and was the pupil of Girardin and afterwards of Chevreul. In 1846 he was appointed

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Honorary Professor of Chemistry in the Royal Institute, Manchester, and has, since then, occupied many positions of honor. He was a Fellow of the Royal Society, and also of the Chemical Societies of London and Paris, and other scientific associations.

Besides being the author of numerous contributions to scientific literature,—several of which have appeared in this Journal—Dr. Calvert paid special attention to the development of the industrial arts, and was the originator of several valuable patents, amongst others, that relating to the preparation of carbolic acid, with which our readers are doubtless quite familiar.

Louis John Randolph Agassiz, died on Dec. 14, at Boston, U. S. His death resulted from an attack of paralysis induced by cerebral congestion. Professor Agassiz was born in Switzerland, May, 1807. His paternal ancestors had for six generations been clergymen of the Protestant faith. His mother was the daughter of a physician. He was early destined for the medical profession and successively entered the college at Lausanne, the medical school at Zurich, and the Universities of Heidelberg, and Munich. He soon betrayed a liking for those pursuits in which he afterwards attained such renown, and while quite young he was called upon to compile the discoveries relating to ichthyology which had resulted from the labors of a scientific exploration in Brazil. This branch of science was always a favorite one. Later on we find Agassiz engaged on his great work on fossil fishes. This book is in five volumes, and is accompanied by an atlas containing illustrations in detail of over one thousand different species. This work was followed by one on the *Fresh-water Fishes*; an index and classification of the entire Animal Kingdom, and other works of a kindred character. The *Systeme Glaciere* was published somewhat later, and was anticipated by *Etudes sur les Glaciers*, in which Agassiz first unfolded his ideas in regard to the glacial theory.

In 1846, Agassiz arrived in the United States and was employed in scientific labours in connection with the Coast Survey. He afterwards accepted the Chair of Zoology and Geology at Harvard University, and since then has been engaged in many explorations and expeditions in various parts of this continent.

Few men have done more to develop and enrich zoology and the kindred branches of science than has Prof. Agassiz. His success is

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to be attributed to his entire devotion to his subject and his indefatigable industry. This is is well exemplified by the following extract, taken from a New York paper:

"The secret of the great personal influence exerted by Prof. Agassiz, and which enabled him to secure from wealth the assistance that his extensive scientific undertakings required, lay principally in his singleness of soul. He had but one object ever in view, and other matters were not merely subsidiary; they were all but forgotten. To science he was not only an humble student, a ministering priest —he was a self-abandoning devotee. One expression indicating this characteristic has been often quoted. A business man was urging him to become a partner in some commercial undertaking in which the technical knowledge of Prof. Agassiz was to be regarded as an equivalent for the capital and mercantile experience of the other members of the firm.

"You would make any amount of money in the business," said the man of dollars.

"I have no time to make money," replied the man of science.

Somewhat similar is another incident which he mentioned in private conversation, with the request that it should not be repeated with names. A publishing firm wrote to him urging him to write a book on natural history for use in schools, and offering him a large pecuniary inducement. "I wrote them," said he, and his eyes sparkled with indignation, "that I was not the man to do this sort of work. And I told them, too, that the less of this work was done, the better. It is not school books that we want, it is students. The book of nature is always open. All that I can write and say shall be to make them study that book, and not to pin their faith to any other." The self-denial of Prof. Agassiz may be better appreciated when the fact is mentioned that the salary of his professorship was only $1,500 per year.

Professor Agassiz was a fellow of the Royal Society of London, a member of the French Academy of Sciences, and of the National Academy of Sciences, United States, and numerous other scientific associations. He also held the Wollaston medal from the Geological Society of London, and the medal of merit from the King of Prussia.

Removal of Nicotine from Tobacco Smoke.—The following letter appeared in the *Pharm. Jour. and Trans.* Nov. 1st:

Sir,—In the *Pharmaceutical Journal* for August 30, under the head of "Notes and Queries," I find a quotation from the *Canadian Pharmaceutical Journal* relative to the above subject.

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I find it stated that "a patent has been taken out for a process for the removal of nicotine from tobacco. The smoke is drawn through a sponge saturated with a solution of tannic acid, tartaric or citric acids, glycerine, and a flavoring ingredient, such as Florida or clove water."

I beg to direct the attention of your readers to a note in the *Lancet* of April 7th, 1866, in which M. Melsens' method of preventing the baneful effects of nicotine is indicated. It will be seen on reference to this note that the method devised by M. Melsens is essentially the same as that for which the patent has been obtained.

In a letter of mine in *Scientific Opinion*, April 18th, 1866, I thus comment on M. Melsens' method. "The chemical theory on which his method is based is strictly correct, but I cannot say as much for the method itself. I have tried many experiments with the ball of cotton impregnated with the tannic and citric acids, and in every case I was able to detect nicotine in the smoke, and that too in considerable quantity. I am bound to say, however, that the quantity was by no means so great as when the cotton ball was not used. In a manuscript work which I communicated to the Royal Academy of Medicine of Belgium on the 'Effects of Tobacco' I describe an apparatus for bringing the tobacco smoke through *water* before allowing it to enter the mouth. After I read of M. Melsens' method I substituted a solution of tartaric and citric acids for the water, and in no instance could I then detect the slightest trace of nicotine in the tobacco smoke." I would ask whether it is strictly fair of our Canadian friends to take out a patent for a process which has been invented seven years ago, without tendering some acknowledgment to those who have been, so long ago, working at the subject.

W. Handsel Griffiths,
Ph. D., L.R.C.P.E., L.R.C.S.E.
2 Sydenham Road, Dundrum, Dublin.

We gladly insert the above letter, and had we been aware of Mr. Griffiths' or M. Melsen's researches in regard to the action of tartaric and citric acids, should certainly have called attention to them at the time the note was published. We think, however, that the principle substance relied on by the patentees is tannic acid, but are not sure whether the credit of this discovery belongs rightfully to them. Dr. Williams (*Medical Record* and this Journal, August 1769) recommends a sponge saturated with solution of tannin; and Dr. Shelby, (Boston *Journal of Chemistry*, and this Journal, Oct. 1869) calls attention to the action of tannin, and also to that of sassafras bark, which probably owes its powers to the same substance. We have also known the Indians of the western praries to collect the leaves of the upland sumach, *Rhus glabrum*, for the purpose of

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mixing with their tobacco. These leaves contain a considerable proportion of tannin. In smoking what Mrs. Partington is pleased to term "the calomel of peace," with this mixture, we remember noticing that the then much esteemed color of a meerschaum, rapidly deteriorated and was in time spoiled. We think it very questionable whether the question of originality either with regard to the tannin, or the tartaric or citric acids was enquired into very closely at the time the patent was granted.

Owing to an omission in transferring the extract from our pages to that of our contemporary, Mr. Griffiths charges Canadians with a want of courtesy which by right should be laid at the door of our American cousins. We said that the removal of nicotine had "been made the subject of a patent in the United States." Our contemporary merely says that a patent had been taken out, and Mr. Griffiths infers that it was in Canada.

College of Technology.—The lectures on Chemistry, in this school, have now commenced, the class meets on Monday, Wednesday and Friday evenings, at eight o'clock. Pharmaceutical students may attend by merely entering their names, and without the payment of fees.

Editorial Summary.

Fluid Extract of Cinchona.—R. Rother (*Pharmacist*), thinks the following formula preferable to that of the *U. S. P.*, 1870, in which glycerine is employed:

Take of Cinchona, in powder, from No. 50 to the finest grade, 16 troy ounces.
Chlorhydric Acid, sp. gr. 1.16, 1 to 2 fluid ounces.
Strong Alcohol,
Water. Each, sufficient.

Make a mixture of 3 measures of strong alcohol and 1 measure of water. Take three pints of this mixture and add to it the chlorhydric acid. Upon 4 troy ounces of the powder placed into a porcelain basin, pour 2 to 3 fluid ounces of the acid mixture, and unite the whole thoroughly with the aid of a pestle; add four troy ounces more of the powder, mix it well with the previous lot, and finally

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add the remainder, incorporating it all in an appropriate manner, adjust the moistened powder firmly in a cylindrical glass percolator, forming a moderately low column, and pour on the menstruum, regulating the current by the lower orifice at a slow rate; reserve the first 12 fluid ounces of the percolate, continuing the percolation by the addition of alcohol and water as above directed, until about 2½ pints more of the percolate has been obtained; evaporate this at a moderate heat to 4 fluid ounces, and add to it, while yet warm, the reserved portion of the percolate, stirring the mixture a few moments until the separated residue has dissolved. The dense residue left after evaporation does not readily admit of measurement, but it rapidly dissolves in the reserved portion, especially if gently warmed. If the whole measures less than 16 fluid ounces, add strong alcohol until that measure is obtained.

Absence of Morphia in the Petals of Papaver Rheas.—In a paper read before the British Pharmaceutical Conference, Prof. Attfield gave the details and results of an examination of the petals of the red poppy. Pharmaceutical authorities have, so far, been undecided as to the presence of morphia in the petals, and Prof. Attfield's testimony, on this occasion, is on the negative side. About 6,000 fresh petals, weighing one pound, were operated upon, and it was also assured, by experiment, that the processes used would isolate morphia if that alkaloid were present. Two trials with the quantity of flowers stated above failed to give the slightest evidence of the presence of morphia. It must be remembered that these experiments were made on the red poppy and do not refer to the petals of the white poppy, *Papaver somniferum*, specially grown for opium.

Impurity of Commercial Guaiacum.—J. B. Barnes (*Pharm. Jour. & Trans.*) finds the quantity of pure resin contained in commercial guaiacum to be equal to about fourteen ounces in the pound.

Amount of Extract obtainable from Colocynth.—The same authority named in the preceding paragraph found that simple extract of colocynth, prepared by two macerations of the pulp in cold distilled water, pressing, boiling the liquor, separating the coagulated matter, evaporating to dryness, and exhausting with rectified spirit, yielded the same amount of extract as was obtained from the same quantity of pulp which had been exhausted with proof spirit and evaporated to dryness, until the weight was constant.

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Addition of Glycerine to Astringent Infusions.—Mr. Barnes also states that glycerine may be successfully added for rendering astringent infusions bright. One part of glycerine to nine of infusion of roses is said to be sufficient.. Mixtures of infusion of roses and sulphate of quinia, in which a precipitate of tannate of quinia is produced, may be rendered transparent by a similar addition, as also gargles composed of tannic acid and infusion of roses.

New Antidote to Strychnia.—It is asserted by a correspondent of an Australian paper that salad oil promptly applied is an antidote to strychnia. The remedy has not been tried on man; but, on dogs, a half pint of oil is said to be sufficient to prevent fatal results.

Practical Formulæ

Camphor Ice with Glycerine.—

(1.) Take

Spermaceti	6	ounces.
White Wax	4	"
Oil of almonds	32	"
Gum camphor	5	"
Glycerine	2	"
Borax	2	drachms.

Melt the sperm and wax, add the oil and then the camphor; when dissolved add the glycerine and borax dissolved in three ounces of rose water, stir until nearly cold, and pour into moulds.

(2.) Take

Spermaceti	6	ounces.
Wax	2	"
Glycerine	2	"
Powdered camphor	1½	"

Mix as above.—*Druggist's Circular.*

Registrar's Notices.

NEW REGISTRATIONS.

Chaffey, S. B., Newboro. Nelson, C. A., Montreal.

SPECIAL NOTICE TO ASSOCIATES.

The Registrar would remind all those who have not paid the Associate fee of $2 for the current year, that the Journal will be discontinued after the present number.

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DRUGS, MEDICINES, &c.	$ c.		$ c.
Acid, Acetic, fort	0 14	@	0 15
Benzoic, pure	0 23		0 30
Citric	1 40		1 50
Muriatic	0 05		0 06
Nitric	0 11½		0 15
Oxalic	0 22		0 26
Sulphuric	0 03½		0 07
Tartaric, pulv	0 50		0 50
Ammon, carb. casks	0 23		0 24
" jars	0 23		0 24
Liquor, 880	0 25		0 28
Muriate	0 14		0 15
Nitrate	0 45		0 60
Æther, Acetic	0 45		0 50
Nitrous	0 35		0 37
Sulphuric	0 50		0 50
Antim. Crude, pulv	0 15		0 17
Tart "	0 55		0 65
Alcohol, 95 per ct.....Cash	1 60		1 72
Arrowroot, Jamaica	0 18		0 22
Bermuda	0 50		0 65
Alum	0 02½		0 03½
Balsam, Canada	0 50		0 50
Copaiba	0 95		1 00
Peru	3 75		4 00
Tolu	0 90		1 00
Bark, Bayberry, pulv	0 20		0 22
Canella	0 17		0 20
Peruvian, yel. pulv	0 42		0 50
" red "	2 10		2 20
Slippery Elm, g. b	0 15		0 20
" flour, packets	0 28		0 32
Sassafras	0 15		0 20
Berries, Cubebs, ground	0 20		0 25
Juniper	0 06		0 10
Beans, Tonquin	0 62		1 10
Vanilla	30 00		30 00
Bismuth, Alb	3 40		4 00
Carb.	3 65		4 00
Camphor, Crude	0 38		0 40
Refined	0 45		0 50
Cantharides	2 80		3 00
Powdered	2 85		3 10
Charcoal, Animal	0 04		0 06
Wood, powdered	0 10		0 15
Chiretta	0 20		0 30
Chloroform	1 10		1 65
Cochineal, S. G	0 75		0 90
Black	1 10		1 20
Colocynth, pulv	0 50		0 60
Collodion	0 90		1 00
Elaterium.....oz	3 20		4 00
Ergot	0 35		0 45
Extract Belladonna	1 50		1 60
Colocynth, Co	1 25		1 75
Gentian	0 50		0 60
Hemlock, Ang	0 85		0 95
Henbane, "	1 50		1 60
Jalap	5 00		5 50
Mandrake	1 75		2 00
Nux Vomic.....oz	0 40		0 50
Opium.....oz	1 50		
Rhubarb	5 00		5 50
Sarsap. Hon. Co	1 00		1 20
" Jam. Co	3 50		4 00
Taraxacum, Ang	0 70		0 80
Flowers, Arnica	0 17		0 25
Chamomile	0 32		0 40
Gum, Aloes, Barb. extra	0 70		0 80
" " good	0 40		0 50
" Cape	0 16		0 20
" " powdered	0 20		0 30
Socot	0 50		1 35
" " pulv	1 00		0 00
Arabic, White	0 70		0 75
" powdered	0 60		0 75
" sorts	0 24		0 30
" " powdered	0 42		0 50
" com. Gedda	0 13		0 16
Assafœtida	0 40		0 42
British or Dextrine	0 13		0 15
Benzoin	0 35		0 75
Catechu	0 12		0 15
" powdered	0 25		0 30
Euphorb, pulv	0 35		0 40
Gamboge	1 40		1 50
Guaiacum	0 90		1 00
Myrrh	0 50		0 70

DRUGS, MEDICINES, &c.—*Contd.*	$ c.		$ c.
Sang Dracon	0 60		0 70
Scammony, powdered	6 00		6 50
" Virg. "	14 50		—
Shellac, Orange	0 65		0 70
Gum, Shellac, liver	0 60		0 65
Storax	0 40		0 45
Tragacanth, flake	1 10		1 40
" common	0 53		0 65
Galls	0 28		0 32
Gelatine, Cox's 6d	1 15		1 20
Glycerine, common	0 25		0 30
Vienna	0 25		0 30
Prices	0 60		0 75
Honey, Canada, best	0 15		0 17
Lower Canada	0 14		0 16
Iron, Carb. Precip	0 20		0 25
" Sacchar	0 40		0 55
Citrate Ammon	1 65		1 70
" & Quinine, oz	0 55		0 58
" & Strychine	0 20		0 25
Sulphate, pure	0 08		0 10
Iodine, good	6 75		7 00
Resublimed	7 50		8 00
Jalapin	1 25		1 50
Kreosote	2 40		2 50
Leaves, Buchu	0 22		0 30
Foxglove	0 25		0 30
Henbane	0 35		0 40
Senna, Alex	0 27		0 60
" E. I	0 14		0 20
" Tinnevilly	0 20		0 30
Uva Ursi	0 15		0 17
Lime, Carbolate.....brl	5 50		—
Chloride	0 06		0 07
Sulphate	0 08		0 12½
Lead, Acetate	0 15		0 16½
Leptandrin.....oz.	0 60		—
Liq. Bismuth	0 50		0 75
Lye, Concentrated	1 75		2 00
Liquorice, Solazzi	0 50		0 55
Cassano	0 23		0 40
Other brands	0 14		0 25
Liquorice, Refined	0 35		0 45
Magnesia, Carb..... 1 oz.	0 20		0 25
" ..... 4 oz.	0 17		0 20
Calcined	0 65		0 75
Citrate.....gran.	0 63		0 75
Mercury	1 70		1 75
Bichlor	1 65		1 75
Chloride	1 80		1 90
C. Chalk	0 75		80
Nit. Oxyd	1 90		2 00
Morphia Acet	4 45		4 60
Mur.	4 45		4 60
Sulph	4 60		4 75
Musk, pure grain.....oz	25 00		—
Canton	0 90		1 20
Oil, Amonds, sweet	0 40		0 45
" bitter	14 00		15 00
Aniseed	4 00		4 25
Bergamot, super	6 25		6 50
Caraway	3 20		3 50
Cassia	2 50		2 60
Castor, E. I	0 14		0 15
Crystal	0 22		0 25
Italian	0 26		0 28
Citronella	1 25		1 35
Cloves, Ang	2 75		3 00
Cod Liver	1 25		1 50
Croton	1 75		2 00
Juniper Wood	0 80		1 00
Berries	6 00		7 00
Lavand, Ang.....oz.	0 90		1 00
Exotic	1 40		1 60
Lemon, super	5 00		5 50
ord	3 20		3 40
Orange	4 00		4 25
Origanum	0 65		0 75
Peppermint Ang	13 00		14 40
" Amer	3 80		4 00
Rose, Virgin	8 50		8 75
" good	6 80		7 00
Sassafras	0 90		1 00
Wintergreen	6 00		6 50
Wormwood, pure	4 00		6 50
Ointment, blue	1 30		1 40
Opium, Turkey	8 50		8 75
pulv	10 50		10 75

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DRUGS, MEDICINES, &c.—*Cont'd*	$ c.	$ c
Orange Peel, opt.	0 30	0 36
" good	0 12½	0 20
Pill, Blue, Mass	1 30	1 40
Potash, Bi.chrom	0 23	0 27
Bi-tart	0 33	0 35
Carbonate	0 14	0 20
Chlorate	0 55	0 60
Nitrate	10 50	11 00
Potassium, Bromide	1 10	1 25
Cyanide	0 75	0 80
Iodide	6 75	7 00
Sulphuret	0 25	0 35
Pepsin, Boudault's oz	1 40	—
Houghton's doz.	8 00	9 00
Morson's oz.	0 85	1 10
Phosphorus	0 95	1 00
Podophyllin	0 50	0 60
Quinine, Pelletier's	—	2 45
Howard's	2 70	—
" 100 oz. case	2 70	—
" 25 oz. tin	2 65	—
Root, Colombo	0 13	0 20
Curcuma, grd	0 12½	0 17
Dandelion	0 17	0 20
Elecampane	0 16	0 17
Gentian	0 08	0 10
" pulv	0 15	0 20
Hellebore, pulv	0 17	0 20
Ipecac, "	1 50	1 60
Jalap, Vera Cruz	90	1 15
" Tampico	0 70	1 00
Liquorice, select	0 12	0 13
" powdered	0 15	0 20
Mandrake "	0 20	0 25
Orris, "	0 20	0 25
Rhubarb, Turkey	2 50	2 75
" E. I	1 10	1 20
" " pulv	1 20	1 30
" " 2nd	0 90	1 00
" French	0 75	—
Sarsap., Hond	0 40	0 45
" Jam	0 88	0 90
Squills	0 10	0 15½
Senega	1 10	1 20
Spigelia	0 25	0 30
Sal., Epsom	2 25	3 00
Rochelle	0 32	0 35
Soda	0 02½	0 03
Seed, Anise	0 13	0 16
Canary	0 05	0 06
Cardamon	2 25	2 50
Fenugreek, g'd	0 09	0 10
Hemp	0 06½	—
Mustard, white	0 14	0 16
Saffron, American	1 00	1 10
Spanish	12 00	13 00
Santonine	7 50	8 00
Sago	0 08	0 09
Silver, Nitrate Cash	14 85	16 50
Soap Castile, mottled	0 11	0 14
Soda Ash	0 04	0 05
Bicarb. Newcastle	—	6 50
" Howard's	0 14	0 16
Caustic	0 06½	0 06½
Spirits Ammon., arom	0 35	0 35
Strychnine, Crystals	2 60	2 70
Sulphur. Precip	0 10	0 12½
Sublimed	0 03½	0 05
Roll	0 03	0 04½
Vinegar, Wine, pure	0 55	0 60
Verdigris	0 35	0 40
Wax, White, pure	0 75	0 80
Zinc. Chloride oz	0 10	0 15
Sulphate, pure	0 10	0 15
" common	0 06	0 10
DYESTUFFS.		
Annatto	0 35 @	0 60
Aniline, Magenta, cryst	2 50	2 80
" liquid	2 00	—
Argols, ground	0 15	0 25
Blue Vitrol, pure	0 10	0 10
Camwood	0 06	0 09
Copperas, Green	0 01½	0 02½
Cudbear	0 16	0 25
Fustic, Cuban	0 02½	0 04
Indigo, Bengal	2 40	2 50
Madras	0 90	0 95
Extract	0 30	0 35

DYESTUFFS—*Continued.*		
Japonica	0 07¾	0 08
Lacdye, powdered	0 33	0 38
Logwood	0 02	0 03
Logwood, Camp	0 02	0 3½
Extract	0 10	0 14
" 1 lb. bxs	0 13	—
" ½ lb. "	0 14	—
Madder, best Dutch	0 13	0 15
2nd quality	0 12	0 14
Quercitron	0 03	0 05
Sumac	0 06	0 08
Tin, Muriate	0 10½	0 12½
Redwood	0 05	0 06
SPICES.		
Allspice	0 11½@	0 12
Cassia	0 39	0 40
Cloves	0 40	0 42
Cayenne	0 30	0 35
Ginger, E. I	0 19	0 20
Jam	0 20	0 30
Mace	1 65	1 75
Mustard, com	0 20	0 25
Nutmegs	1 15	1 20
Pepper, Black	0 22½	0 23
White	0 48	0 50
PAINTS, DRY.		
Black, Lamp, com	0 07 @	0 08
" refined	0 25	0 30
Blue, Celestial	0 08	0 12
Prussian	0 65	0 75
Brown, Vandyke	0 10	0 12½
Chalk, White	0 01	0 01½
Green, Brunswick	0 07	0 10
Chrome	0 16	0 25
Paris	0 30	0 35
Magnesia	0 20	0 25
Litharge	0 07	0 09
Pink, Rose	0 12½	0 15
Red Lead	0 07¼	0 08
Venetian	0 02½	0 03½
Sienna, B. & G	0 07	0 08
Umber	0 07	0 10
Vermillion, English	1 75	1 80
American	0 25	0 35
Whiting	0 85	0 90
White Lead, dry, gen	0 08½	0 09
" " No. 1	0 07	0 08
" " No. 2	0 05	0 07
Yellow Chrome	0 12½	0 35
" Ochre	0 02½	0 03½
Zinc White, Star	0 10	0 12
COLORS, IN OIL.		
Blue Paint	0 12 @	0 15
Fire Proof Paint	0 06	0 08
Green, Paris	0 30	0 37½
Red, Venetian	0 07	0 10
Patent Dryers, 1 lb tins	0 11	0 12
Putty	0 03¾	0 04½
Yellow Ochre	0 08	0 12
White Lead, gen. 25 lb. tins	2 50	—
" No. 1	2 25	—
" No. 2	2 00	—
" No. 3	1 75	—
" com	1 30	—
White Zinc, Snow	2 75	3 25
NAVAL STORES.		
Black Pitch	5 00 @	5 25
Rosin, Strained	4 50	—
Clear, pale	7 80	—
Spirits Turpentine	0 58	0 60
Tar Wood	5 50	5 75
OILS.		
Cod	0 63 @	0 70
Lard, extra	0 85	0 90
No. 1	0 75	0 80
No. 2	0 75	0 90
Linseed, Raw	0 75	0 80
Boiled	0 80	0 85
Olive, Common	1 10	1 20
Salad	1 80	2 30
" Pints, cases	4 20	4 40
" Quarts	3 25	3 50
Seal Oil, Pale	0 68	0 70
Straw	0 68	0 70
Sesame Salad	1 30	1 35
Sperm, genuine	2 20	2 40
Whale refined	0 90	0 95

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Original and Selected Papers.

ON THE EFFECT OF GLYCERIN IN MODIFYING THE ACTION OF ASTRINGENTS.

BY E. B. SHUTTLEWORTH.

There have been few additions to the materia medica, which, in so short a time, have attained a more universal popularity, have been applied to as manifold uses, or been more generally extolled than glycerin. Its powers as a solvent, equalling, if not exceeding, those of alcohol, have opened up a wide field of usefulness which has generally been entered upon with great advantage. It may be, however, quite possible, and even probable, that a property of such ready adaptability, and of so wide a range, has been too generally made use of; sometimes under circumstances in which its effects may have proved the reverse of beneficial. Of such a character is the indiscriminate employment of glycerin in the preparation of tinctures or fluid extracts of vegetable substances of complex composition; when, though a presentable and permanent compound

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may be obtained, inert, or, perhaps, injurious agents, which would have been much better undisturbed, are dissolved and retained in solution.

It is not, however, to this modifying action that I would, at present, call attention, but to an effect depending on another cause. Physicians who have been in the habit of using astringents—as tannic acid, and some of the preparations of iron—have noticed that when these substances are mixed with glycerin, a different, and much milder effect is realized than when an aqueous solution is employed. During the last few months, some of the pharmaceutical journals have alluded to this effect;* and, at the last meeting of the British Pharmaceutical Conference, it was made the subject of a short discussion.† It was then stated, by the president, that he was aware of an instance in which three hundred grains of perchloride of iron, dissolved in glycerin, was swallowed, by mistake, and without any ill effects. It is certain that a much smaller quantity, in aqueous solution, would have produced serious results. The common experience of physicians with regard to the comparative inefficiency of *glycerinum acidi tannici* was also alluded to. Again, at a meeting of the Pharmaceutical Society held Dec. 3rd,‡ it was stated as a well-known fact, that, if a greatly astringent effect is desired, the solution of tannin in glycerin must be diluted with water; and that the same is true in regard to the styptic action of a solution of perchloride of iron in glycerin. It was also stated that *glycerinum acidi carbolici* was much milder in action than an aqueous solution of similar strength. At the last meeting of the American Pharmaceutical Association the effect of glycerin on astringents was alluded to as having been noticed; as all these statements coincide with the opinions of observant physicans, this modifying action of glycerin may be recognized as an acknowledged fact.

It becomes interesting for us to ascertain the cause of this modifying action; and, in this endeavour, we may consider, first: the nature of the physiological and therapeutical effects produced by astringents; and, secondly, the effect of glycerin on the chemical properties of this class of remedies.

*Glycerin: by A. H. Mason, F.C.S., *Chemist & Druggist*, April 1873, p. 119; and *Can. Pharm. Jour.*, No. lxii, p. 396.

†Pharm. Jour. & Trans., Oct. 1873 and Can. Pharm. Jour. Vol. vii, p. 172.

‡Pharm. Jour. & Trans. Dec. 1873, p. 451.

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In regard to the first point we find that the action of astringents is, in great part, if not entirely, to be attributed to their chemical agency. In most instances, these bodies have an affinity for certain constituents of the animal solids and fluids, and effect changes by direct combination. Pharmacologists are generally agreed on this matter, and it is thought that, whether applied externally or taken internally, these remedies have a more or less local action, producing astriction or corrugation of the tissues, or coagulation of the fluids. In regard to tannic acid,* Pereira says "Tannin acts on the animal tissues by virtue of its affinity for their constituents. It forms, with albumen and gelatine, compounds which are insoluble in water; and it also combines with fibrin, when taken into the stomach it unites with the constituents of the epithelium, and of the mucous membrane of the alimentary canal." It may therefore be assumed that astringents are, in general, merely chemical agents, and if their anticipated effect is to be realized, their chemical composition must not be modified or disturbed.

In order to determine the chemical action of glycerin on astringents I have commenced a series of experiments, which has, so far, only being completed so as to afford indications of a definite and satisfactory conclusion. The substance chosen as best representing the class of vegetable astringents is gallo-tannic acid—the tannin of commerce; the mineral astringents may be aptly represented by the perchloride and persulphate of iron.

The effect of reagents on an aqueous solution of the *glycerinum acidi tannici* is precisely similar to that produced on a simple aqueous solution of tannin. The salts of iron, tartrate of potash and antimony, chloride of sodium, sulphuric and hydrochloric acids, and gelatin, give, in both cases, colorations and precipitates, alike in appearance. In order to ascertain the comparative power of the two solutions in precipitating gelatin, solutions equal in tannin strength were prepared, and it was found that an equal number of measures of the same solution of gelatin were required for precipitation.

Being unable to detect any difference in the behaviour of these aqueous solutions, a solution of tannin in glycerin, undiluted, was treated with solution of gelatin, and it was found that the tannin was *not precipitated;* or, at least, that only a small portion of the glycerin solution which was in immediate contact with the water con-

*Elements of Materia Medica and Therapeutics, Vol. 1, p. 98.

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tained in the solution of gelatin was so affected. This superficial layer of coagulum was, on the application of a gentle heat, immediately dissolved. This result is, so far, satisfactory, and affords a possible explanation of the fact before alluded to—that, in order to realize the full astringent effect of the glycerin preparation of tannin, dilution with water is necessary.

I have not had time to pursue this subject further, or to examine into the effect, noted by some observers, that glycerin prevents the precipitation of some of the salts of iron by alkalies.

Speculating on this subject, and bringing to our aid those facts relating to the properties and affinities of glycerin which are already known, we find that this substance is by no means chemically inert, not indeed sufficiently so as to admit of a general application as a solvent. The range of glycerin compounds is not at all a limited one, but quite extensive, comprising salts many of which are well defined, and which possess strong individual characteristics and properties. Of those are the simple compounds of glycerin and the inorganic and organic acids, or the more characteristic glycerides or glyceryl ethers. I would hazard the suggestion that when glycerin and tannic acid are left in contact for a considerable time, or when heat is applied as in the pharmacopœial process, that a glycerotannic acid, or ether is formed. The distinguishing termination *in* applied to ethers of this kind would not, in this case, be appropriate.

I hope to resume this subject when sufficient leisure for further experiment presents itself.

Toronto, Jan. 10, 1874.

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A NEW SOLVENT OF PHOSPHORUS; ITS PREPARATION AND PHARMACEUTICAL USE.*

BY A. W. GERRARD,

Dispenser and Teacher of Pharmacy to the University College Hospital.

The principal known and most generally adopted solvents of phosphorus for pharmaceutical purposes are bisulphide of carbon, chloroform, ether, alcohol, oil of almonds, oil of theobroma, and mutton suet.

The power of these bodies to dissolve this element varies from any proportion to less than half per cent.; the most powerful being bisulphide of carbon, the least, alcohol.

Most of the above solutions of phosphorus, when dispensed, are of an unsatisfactory and unstable character. Those which are fluid and miscible with water in the presence of mucilage—the manner in which it is usually prescribed—are rapidly decomposed and become inert; they are likewise nauseous and objectionable to the patient in an extreme degree. The solid forms are but little better and are exceedingly troublesome to manipulate.

Bisulphide of carbon has been recommended by Mr. Proctor, of Newcastle, as a means of dispensing phosphorus in the pill form, and it answers the purpose very well, with the exception that the pills retain a compound smell of phosphorus and bisulphide of carbon, which is repulsive in the utmost degree.

The new substance which I propose to add this evening to the list of solvents of phosphorus is resin, that body described in the Pharmacopœia as the "residue of the distillation of the turpentine." This substance suggested itself to me amongst others as a probable solvent, and the result of my experiments upon it is that I have found it capable of dissolving four or more per cent. of phosphorus; the limit of its solubility is a question for further experiment.

I would call this substance phosphoretted resin. The method of preparing it is thus:—Take a strong wide-mouthed well-stoppered bottle and weigh it, then melt a quantity of resin sufficient to fill the bottle; let the bottle be warmed, then pour in the resin to nearly but not quite fill the bottle, reweigh, and for every ninety-six parts of resin take four of phosphorus. Now observe that the resin is in a fluid state; if so, add the phosphorus, and fix the stopper tightly. Place in a sand-bath previously warmed, and apply heat to 200° C. or 392° F.; digest at this temperature, and shake frequently until the phosphorus is dissolved.

*Read at a meeting of the British Pharmaceutical Society, and reported in the Pharmaceutical Journal & Transactions.

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The kind of resin to be used in this preperation is the black translucent variety, known in commerce as rosin, not that pale yellowish kind usually met with in chemists' shops, unless it has previously been deprived of its water, of which it contains a varying amount, sometimes ten per cent.

In conducting the process, it is necessary to observe the following precautions :—In adding the phosphorus, if possible let it be in one piece, and take care that the resin is previously in a fluid condition, as then the phosphorus readily sinks below the surface, and is covered by the resin; otherwise, if the phosphorus were in small pieces and the resin semi-fluid, the phosphorus would rest on the half-hot resin, and speedily take fire; but by observing the above precautions, this accident may be prevented.

A bottle full of the preparation should be made at a time, as I find there is great risk of accident (having had one myself) if the vessel is only partly filled. The phosphorus is also volatilized, and deposited in the upper portion of the bottle.

Keep a thermometer in the sand-bath during the process, and maintain the temperature between 200 and 210 C. At higher temperatures the resin boils, and the heat is liable to change the phosphorus to the red amorphous state.

When the prepared resin has cooled it is difficult to remove it unless the bottle be broken; the method I have adopted is to draw it from the bottle, when partly cooled, under hot water.

It is a pharmaceutical process which, like many others, requires care and attention to ensure success, but whatever difficulties may arise, to a practical person a remedy will suggest itself.

I will here mention a curious change which takes place if this phosphoretted resin be reheated. When it reaches a certain temperature it becomes of a whitish cream colour throughout, if the temperature be raised still higher it again becomes transparent; this phenomenon does not occur in the cooling. It is probably due to the influence of molecular change.

The formula I would suggest for its exhibition is the following: Take of—

Phosphoretted Resin, 4 per cent.....25 grains.
Powdered White Sugar.....75 "
Tincture of Tolu, a sufficient quantity.

Pulverize the resin, mix with the sugar, and form into a mass with tincture of tolu,—eight to ten drops are sufficient; then divide into twenty pills, each pill will contain one-twentieth of a grain. This forms a mass of an excellent consistence, and pills made therefrom retain their form and present an elegant appearance without the addition of any coating; they have but a faint odour of phosphorus, and that may be completely removed by the addition of oil of peppermint.

The experience gained from the administration of these pills in

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the in-and out-patients' departments of the hospital to which I am attached proves that the theurapeutic properties of the phosphorus are in no way injured or modified by this combination, but that it is fully equal to any that had been previously used.

In conclusion, I consider the advantages of this preparation to be that it is inoffensive to the taste of the patient, definite and reliable for the prescriber, ready and convenient to the dispenser, and I believe judging from its nature it has unlimited keeping powers.

The reading of this paper gave rise to the following discussion:

The President said they were much obliged to Mr. Gerrard for bringing this subject forward. I was very difficult to manipulate phosphorus for medicinal use. Mr. Gerrard had not only the advantage of making this preparation, but of hearing what medical men said, and they seemed to approve of it.

Mr. Gerrard added that he had asked medical men what was their experience of its therapeutical effects, and they had told him that it was equal to anything that had been previously dispensed.

Mr. Greenish mentioned that Mr. Gerrard had put into his hands some of the phosphoretted resin a day or two before, upon which he had made several experiments, with the object of obtaining from it a preparation in a liquid form; he found that, mixed with mucilage, it gave a deposit after a time. If the resin were dissolved in chloroform, and the proportion of spirit required to make it spirit of chloroform added, a more satisfactory result was obtained. A little orange-flower water mixed with the solution concealed the taste of the phosphorus. He should prefer some method of sending out phosphorus in mixture rather than in pills. Mr. Greenish asked Mr. Gerrard whether his attention had been directed to a phosphorus pill which had been brought out, and which appeared to be prepared from some kind of resin.

Mr. Gerrard said that he had experimented on samples of the pills to which he supposed Mr. Greenish referred. He had placed one of them, as well as a pill prepared according to his own formula, to digest in a ten per cent. solution of hydrochloric acid. The latter, as might be expected from the quantity of sugar it contained, commenced to dissolve immediately, but the former was quite unacted upon at the end of twenty-four hours.

Mr. Martindale thought Mr. Gerrard's form of making the preparation would be very useful. There were two or three preparations of phosphorus before the public at the present time worthy of note, especially those phosphorus pearls which contained about one-thirtieth grain of phosphorus, and were coated with gelatine. These seemed to be most agreeable to the patient, because they had no smell of phosphorus at all, and they were, as a rule, very efficacious. It has been stated by a writer in the *Practitioner* that one grain of phosphorus was soluble in three fluid drachms of alcohol; this was

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true, so long as heat was applied, but when the alcohol became cold, it deposited nearly the whole of it—at least three-fourths were deposited. Such statements about its solubility would make the dose very different from what might be expected.

Professor Attfield asked in what state the phosphorus existed in the resin—whether Mr. Gerrard had made any experiments with the view of getting the phosphorus back—whether the phosphorus was in a state of solution, or whether chemically combined? These were points which must be therapeutically as well as chemically interesting. As some present had enquired for a fluid preperation containing phosphorus it might be worth the while of those who were interested in these researches to try those bodies which were produced when phosphoric anhydride was made to act on the aldehydes found in many essential oils. A sort of resin and phosphoretted oil was said to be obtained in that way which would no doubt be soluble in alcohol, and which might be made into emulsion.

Mr. Gerrard thought that phosphorus was objectionable in the form of a mixture which would not keep after being made a day or two. Under the changes of composition a patient might on the third day take a dose not more than one-tenth part of that of the first day. If a little of the resin were taken and rubbed between the fingers it would be found that the phosphosus was evolved. He was inclined to think that if treated with alcohol, the alcohol would remove the resin, and the phosphorus would separate.

Mr. Bland said, he had had an oportunity of examining one of the pills made by Mr. Gerrard, although he did not know exactly how long it had been made; but having burnt it, it was quite evident that the phosphorus existed in the pills in an uncombined state. He should judge, however, that it was rather a mechanical mixture than a chemical solution.

Mr. Williams said that what medical men wanted and were seeking for was phosphorus in the active state, or lower condition of oxidation. He had made large quantities of hypophosphites, and had lately turned his attention to phosphites. He had been gratified in discovering solid phosphorus acid, and had now got it in crystals, and a beautiful body it was. It was probably the terhydride of phosphoric acid, and he believed the phosphites would prove valuable salts for the use of the medical man, because the phosphorus was contained in the half oxidized or probably more active condition.

Mr. Greenish said he forgot to mention that one tablespoonful of such of a mixture as he had prepared and submitted to the meeting contained about one-twentieth of a grain, which should be a dose. He rubbed down some of the resin, and examined it under the strongest power of a microscope, and there were no indications of the presence of undissolved phosphorus.

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OBSERVATIONS ON THE ACTION AND USES OF CROTON-CHLORAL HYDRATE.*

BY OSCAR LIEBREICH, M. D.

Professor of Materia Medica in the University of Berlin.

In have the honor of directing attention to a new remedy, which serves to corroborate the theory I have propounded with respect to the action of hydrate of chloral.

When chlorine gas acts on aldehyde, croton-chloral is formed, as has been demonstrated by Dr. Kramer and Dr. Tinner. In order to avoid a mistake which is apt to be caused by the name, I must here remark that this body possesses no relation whatever to croton oil, although its chemical constitution proves it to be the chlorated aldehyde of crotonic acid. Croton-chloral differs in its outward appearance from hydrate of chloral by its being dissolved with difficulty in water, and by its crystallizing in small glittering tablets. Its action, though similar to that of hydrate of chloral, differs widely from the latter with regard to its physiologicol effects. Four grams, or a drachm, of this substance, dissolved in water, and introduced into the stomach, produce in the course of fifteen or twenty minutes a deep sleep, accompanied by anæsthesis of the head. Whilst the eyeball has lost its irritability, and the nervous trigeminus shows no reaction whatever on being irritated, the tone of the muscles remain unaltered.

I have experimented with this remedy on maniacs during an attack of mania. They remained quietly sitting on their chairs in a deep sleep, their pulse and respiration being unchanged for two whole hours together. If anæsthesis had reached so high a degree in consequence of the application of hydrate of chloral, the patients would have dropped from their chairs, and both their pulse and respiration would have been considerably retarded. I have seen croton-chloral acting in the same way on healthy individuals. In some cases of tic doloureux, the remarkable phenomenon is exhibited that pain ceases before sleep sets in. I am sorry to say, however, that this remedy acts only as a palliative in this dreadful disease. I nevertheless prefer its action to that of morphia, because it has effects as good as the latter remedy, without being so detrimental to the constitution in general. I have never observed any unfavorable effects of croton-chloral on the stomach or any other organ, although I have made frequent experiments with it.

The indications for the use of this remedy are to be found—1. In cases where hydrate of chloral is inapplicable on account of heart

* From the British Medical Journal, Dec. 20.

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disease; 2. In cases of neuralgia in the district of the nervus trigeminus; 3. In cases where very large doses of chloral are necessary to produce sleep. I there recommend the addition of croton-chloral to hydrate of chloral.

Whilst examining the difference between the action of hydrate of chloral and that of croton-chloral, I have discovered the remarkable fact that it is not the first, but the second product of decomposition of the latter substance which is brought into action, on account of the first being too rapidly destroyed. Croton-chloral, when subjected to the influence of an alkali, first forms allyl-chloroform, a trichlorated body, which is rapidly decomposed into a bi-chlorated substance called bichlor-allylene. Now, both chloroform and trichlorated substances act, as I have shown, in their first stage upon the brain, in the second on the spinal cord, and in the third on the heart. The retardation of respiration is to be explained by the agency of these substances on the last-mentioned organ. Bichlorated substances act differently, as is proved by bichloride of ethylene. Even if the circulation of the blood in an animal have been stopped by this latter agent for one minute, life may be restored by artificial respiration, which is impossible whenever trichlorated substances have produced this effect, in which case the muscles of the heart remain paralysed. Well, in animals poisoned by croton-chloral to such a degree that both circulation and respiration are stopped entirely artificial respiration is able to restore the action of the heart immediately, and the life of the animal may thus be saved. Bichlor-allylene, inhaled by the lungs, produces the same effect on animals as croton-chloral. We thus see these bichlorated substances acting on the brain, spinal cord, and medulla oblongata, but not on the heart, which explains the fact that both respiration and circulation remains unaltered in man by a medicinal dose. It is a highly interesting fact, however, that under favorable conditions, we still are able to produce in animals the effects of the first product of decomposition of croton-chloral—*i. e.*, of the trichlorated substance, or of allyl-chloroform. In order to observe these effects it is necessary to introduce immense does of croton-chloral into the body, when paralysis of the heart actually does ensue.

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EMULSION OF COD LIVER OIL.*

BY WILLARD M. RICE, JR.

The high and important position occupied by cod liver oil in the lists of the materia medica, has induced many pharmacists and others to turn their attention to perfecting some mode by which this nauseous remedy may be rendered palatable and acceptable. Many of the formulæ so elaborated have been published in this and other pharmaceutical journals, while it is to be regretted that others have been withheld, thus placing their authors in the constantly increasing lists of nostrum venders. But none of the efforts thus far made have succeeded in *completely* masking the unpleasant fishy taste and smell of cod liver oil, although some approach very nearly to this "consummation devoutly to be wished."

After a series of experiments, at the request of, and assisted by, a medical friend, the writer of this has perfected the following formula, which he offers to his professional brethren, hoping that it may prove useful:

Oleum morrhuæ	fl. ʒviij.
Tragacanth	ʒj.
Sacchar. alb.,	ʒiv.
Ol. gaultheriæ	gtt. lx.
" sassafras	gtt. l.
" amygd. amar.,	gtt. x.
Aquæ	fl. ʒviij.

The tragacanth and sugar are to be dissolved in the water and the mucilage strained. In this is to be incorporated first the essential oils then the cod liver oil. This makes an elegant-looking emulsion, not too thick, containing fifty per cent of the oil, and of a rather pleasant taste and smell.

Many manufacturers combine the lacto-phosphate of lime, etc., with the cod liver oil mixture, but as physicians often consider this decidedly objectionable in a medicine intended, as this is, in most cases, for continued use for a considerably protracted length of time, the author has been induced to omit it. It can be added, however, by a slight modification of the above formula.

*American Journal of Pharmacy, Dec. 1873.

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HOMŒOPATHY IN 1874.

At a recent meeting of the Clinical Society of London, England, Dr. George Johnson read a paper on "Homœopathic Poisoning by Camphor" in which several instances were given of the most serious results having been produced by the homœopathic tinctnre of camphor. This tincture contains the *infinitesimal* quantity of one ounce of camphor to one and a quarter ounces of spirit, and is, therefore, more than seven times stronger then the authorized allopathic preparation.

In reference to this subject the *Pharmaceutical Journal and Trans.* gives the following extract from an article which appeared in the *British Medical Journal.*

"We had occasion lately to point out that homœopathy which had begun as a delusion, is now ending as a fraud. This also appears to be the verdict of the Clinical Society of London, delivered on the occasion of an interesting paper by Dr. George Johnson. Dr. George Johnson has the art of provoking interesting debates; both the Clinical and the Medical and Chirurgical Societies owe to him some of their "best nights." The clinical lectures and the papers of this accomplished physician have always the quality of novelty and sterling thought. It is always either a new fact or a new thought which Dr. Johnson contributes. His paper on "Homœopathic Poisoning by Camphor" was one of the least elaborate of his contributions to medicine; but he rightly judged that it had considerable collateral interest, and it made the Society the scene of an interesting debate. It has long been known to practitioners in London that persons practising pseudo-homœopathy, and catching the sunshine of whatever fashionable notoriety attaches to that as to other delusive innovations, have in fact long since abandoned all scientific claim to be considered as the apostles of a theory, and have been in the habit of administering the time-honoured medicines in time-honoured doses, and on the ordinary common-sense principles embodied in the maxims, *Contraria contrariis curantur*, and *sublatâ causâ tollitur effectus.* We have all of us heard of, and most of us have seen, patients who, under "homœopathic treatment," have been leeched, poulticed, fomented, and even blistered; who have had opiates administered to relieve pain, purgatives to remove constipation, iron to remedy anæmia, strychnia and phosphorus to cure nervous paresis or neuralgia, and so on through the whole pharmacopœia and through the whole range of disease. It is less generally known, but it is still known to a great many, that homœopathic pharmacy has undergone a corresponding transition. No doubt there are staunch homœopaths to be found of the old deluded sugar-plum school; and there are amateur homœopaths, deluded unprofessional persons, to whom nothing stronger than sugar-plums can be entrusted for their zealous

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and misguided ministrations. But these are the neophytes. Ministrants behind the veil practise other mysteries. Harmless sugar-plums, of absolutely neutral character, and chemically innocent of anything but starch, sugar, and dextrine, are the pellets with which the public are encouraged to play. The enlightened homœopathist of the present day takes the drugs of rational medicine and concentrates them to the furthest extent to which modern chemical skill can furnish the means, and administers them in single drops, apparently in order to maintain the appearance of practising the old delusion after the old seeming method. Great precautions are taken to prevent neophytes from cutting their fingers with these sharp weapons. Persons now asking for the "strong tinctures" and the mother tinctures of nux vomica and belladonna, are politely told that they cannot be furnished without a doctor's order. Reason enough there is for this precaution. Dr. Stewart mentioned at the Society, in the course of the discussion last Friday, that he had occasion to order "tincture of strychnia" for a lady who mentioned that she had some in the house. He suggested, accordingly, that she should take ten drops at stated hours. She mentioned, however, that it was "homœopathic tincture," and so strong that three drops was a dose. Cases in which severe twitchings have followed the domestic use of one-drop doses of a homœopathic tincture of strychnia, in which belladonna-poisoning, with mania lasting for several days, followed the use of a homœopathic tincture of belladonna, and in which dysentery followed the use of a homœopathic aperient drop (probably croton oil), are within our own knowledge. The epoch of dynamisation, of cure by the imperceptible action of inappreciable doses, has merged into a period of concentration and of return in secret to the ancient paths of medicine, trodden over under the disguise of the old war-paint, and with the old outcry.

"There is no question that the homœopathist is a much more dangerous person under his new than in his old disguise. Alkaloids are more dangerous weapons than sugar pellets. The most strenuous efforts will not very long suffice to keep the amateur homœopathist in the dark, and induce him or her to rely for mild domestic ailments on starch and dextrine in globules, put up in variously labelled bottles. The course of nature will do much for anxious relatives. The study of the natural history of disease, and of the tendency of disease towards spontaneous cure, has been largely aided by the earlier homœopathic efforts; and for this, as for their earnest though overstrained and delusive protests against anything like polypharmacy, we owe them thanks. But this is a vein which may be worked too freely. It cannot, as they and their patients have found to their cost, be followed with invariable success. Mothers will sigh for the mother tincture; for the tincture of aconite, of which a drop every hour allayed fever; for the nux vomica, the belladonna, and the jalapine; and, confounding the plaything with the poison, accidents will happen

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and the fraud will appear. Mr. Brudenell Carter told, at the Society, an amusing story of the customary practice of a wholesale homoeopathic purveyor of globules and his ways, which were dark. The story not long since appeared in print, without authority, and we are glad to have his authority for a statement which is of great value when so authenticated. We are favoured by Dr. Alfred Swaine Taylor with a further communication to the like effect, and of an extremely decisive and weighty character. He has many times examined homœopathic globules, and, in general, has found them to be composed of sugar and starch only—the sugar, sometimes cane or sucrose, and sometimes sugar of milk or lactose,

"In Dr. Smethurst's case, Drs. Taylor and Odling examined sixty-four small tubes of homœopathic globules, averaging fifty-two globules to a grain, and including, as would appear from the attached labels, every variety of mineral and organic poisons and medicines —arsenic, antimony, charcoal, sulphur, arnica, strychnia, morphia, etc. They satisfied themselves of the absence of any trace in the globules of the substances mentioned; for all the most delicate tests gave negative results. They then mixed up some thousands of the globules with distilled water, and drank off the mixture between them. No effects followed. They used hundreds of the globules in testing and could easily have found in them the 1·40000th part of a grain of arsenic or mercury. As their tests gave no indication, it was quite obvious that if labels dropped off, or bottles were jumbled together, or the manufacturer put, by mistake, the arsenic label on the strychnine bottle, or *vice versâ*, no one could find out the mistake. In those days, no homœopathist, unless he himself prepared the globules or powders could be sure of what really he was giving to a patient; and we have yet to learn that there is greater security for the community at the present time. Perhaps the public analysts will look to the matter. There is here an obvious source of public danger which needs to be guarded against. Homœopathists have, in the words of Dr. George Johnson, "passed from the irrational and ludicrous extreme of infinitesimal dilutions to the dangerous extreme of the greatest possible concentration of active and poisonous drugs." Hampered by their partiality for infinitesimal doses, they usually prescribe none but powerful medicines. As Dr. Stewart expressed it, "being identified in the mind of the public with their own absurdity of infinitesimal doses, and being unwilling publicly to renounce it, they have recourse to concentrated tinctures, in order to produce an appreciable effect by very minute doses." Evidence was adduced before the Clinical Society, of this concentration of strength in modern homœopathic tinctures, solutions, powders, and globules—but especially in the tinctures. The public are kept ignorant of this change, and are using the potent poisons as though they were the original trillionths, which might be either charcoal or arsenic, and might be taken with equal impunity, in doses varying from a globule

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to a malt-shovelful. Already serious results, even death itself, have arisen from this ignorance of the changed conditions of the case. It were a charity to warn the deluded disciples of this fraud of the dangers they run. Homœopathic medicines, made according to the old plan, can be of no use; when manufactured after the modern fashion, they are the most dangerous (because the most concentrated) medicines which can be handled. The one is a fool's bauble; and the other is a double-edged sword.

It will, of course, be urged by the advocates of homoeopathy, that these charges were advanced at the Clinical Society by practitioners interested in the overthrow of the system. We reply, that they were made by men who have the discovery of truth for their object, and who would practise any mode of cure could they ascertain that its principles are based upon sterling facts, capable of standing the test of experiment. They fulfil their duty now in denouncing the fraud, as they fulfilled their duty before, in contemning the delusion which is known as homœopathy.

PRESERVING GRASSES, FERNS, AND FLOWERS.*

The following details in the art of preserving flowers, etc., are given by a lady correspondent of the *Villa Gardener*:—Grasses should be gathered early in July, if we desire them to retain their bright hues without the aid of art. Gathered then, tied up in large bunches, and hung away in a dark closet, they come forth at our bidding, fresh and green as when plucked. Now, by brook-side or in shady places, we can find graceful grasses, which will prove additions to our winter bouquets, but they will lose their colouring, and require a dip into "Judson's Green Dye." Dye them again, and they will last for years. Wild oats, feather-grass, and all their various species are very ornamental in winter, and, mingled with the everlasting flowers—Acrolinium, Xeranthemum, and the white, yellow, and crimson Helichrysums—they vie with their more perishable sisters, whose glories are on the wane. We have just arranged two small vases for the coming winter. The brilliant pink and white Acroliniums add much to their beauty. The white Helichrysums can be dyed a brilliant purple or scarlet with "Judson's Dyes," and exquisite bouquets can easily be manufactured. These "everlasting" flowers should be gathered as soon as the outer leaves open. Tie them up in bundles as you pick them, and hang up, flowers downwards, to dry. Treated in this way, the stems are straight and more easily used. They can be hung to dry in one's chamber, not requiring a darkened place. Most of these flowers are allowed to remain

*Chemist and Druggist.

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too long upon the bushes, and their beauty is spoiled. As they become dusty under the frequent sweepings of carpets, we dip them in cold water; their petals close entirely. We dip the grasses also, to cleanse them, else they will acquire a dingy hue.

Many persons like crystallized grasses. These are easily made by dissolving one pound of alum in one quart of boiling water, suspending the grasses just over the steam—not to touch the water—and as it cools, the crystals gather. Grasses need not be dyed before they are crystallized. A few of them mingled with the green grasses and brilliant-hued flowers light up well.

Ferns are much sought after for floral decorations. Their feathery plumes, pinnated leaves, and graceful forms are very beautiful. They differ from the grasses, for those gathered late in autumn retain their colours better than the fresh ferns of June. The sap has hardened in their leaves. We have gathered them late in November when they were surrounded by snow, and they have kept green all winter. The running fern is a lovely decoration for walls and pictures. Its flowers add much to its grace and beauty, but it fades quickly, and by Christmas but a faint green remains. Dip them in "Judson Dye" (following the directions given on the bottle for dyeing ribbons) and you will keep their lovely colour. After they have been thoroughly pressed in heavy books, then dye them, spread on paper to dry in the shade, and press again. Thus treated, they will last for years. Maidenhair, the most graceful of our ferns, soon loses its colour; but dyed, it is an addition to every collection of grasses or ferns.

Parsley fern is very beautiful; its soft, feathery leaves are always sought after. These, if gathered late in the autumn, will retain their colour much better. The male fern, with its stiff stems, if well pressed, looks beautiful. We mingle it with the many coloured leaves of autumn, or we pin it to the wall-paper, around pictures, or over lace or muslin curtains, and its effects are charming.

Bunches of dyed mosses are to be purchased of all seedsmen in the cities; we dwellers in villages cannot avail ourselves of them if we could; but we can make them even prettier than those exposed for sale. Gather the mosses; pick out all the *débris*, cleanse from dirt, and dry in the sun, then dip into Judson's dye, and spread on paper to dry by fire or sun.

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PHOSPHATE OF IRON AND ITS COMBINATIONS.*

BY CHARLES GEISSE POLK, M. D., OF PHILADELPHIA.

Iron has long deservedly held a very high place in the list of tonics. At least one hundred different combinations have been proposed, and more than one-third of that number are now incorporated into the different pharmacopœias. These are divided into two chemical classes, the proto-salts and the sesqui-salts, designated ferrous and ferric salts, the former being universally esteemed as the more powerful remedial agents, the latter as the more easily managed pharmaceutical products. Of the former the proto-carbonate, the iron reduced by hydrogen, the proto-sulphate, the proto-citrate, and the proto-phosphate are especially esteemed. Of the latter, the chloric tincture, the amomnio-citrate, the pyrophosphate, and alkaline tartrates receive high consideration. Notwithstanding the numerous objections very justly urged against the tincture of the ferric chloride, it is, and probably ever will be, the most valued, and most extensively used of the preparations of iron. The preparation I especially desire to consider in this paper, the phosphate of iron, although by no means a modern one, is scarcely ever used in its officinal form. Uncombined it has never gained much favor. The preparation is, however, a good one, and is capable of being combined so as to form some excellent chalybeate pills. The following formulas are very popular ones with me :—

℞. Ferri phosphatis.....ʒ i.
Quiniæ sulph.....ʒ ss.
Ext. ignatiæ amaræ.....gtt. vj.
M.
Divide in pills No. xxx. Take one three times a day.

℞. Ferri phosphatis.....scr. ij.
Quiniæ sulph.....scr. i.
Ex. belladonnæ alcoholic.....grs. v.
Ex. aconiti alcoholic.....grs. iij.
Ex. cannabis indicæ.....grs. x.
M.
Divide in pills No. xx. One pill three times a day.

℞ Ferri. phosphatis.....scr. ij.
Quiniæ sulph .....scr. i.
Acid arseniosi .....grs. i.
Morphiæ sulph .....grs. i.
M.
Divide in pilis No. xx.

But, however valuable a pilular form of iron may be, it is not

* Philadelphia Medical Reporter, in Am. Drug. Circular.

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that which will hold the popularity of a solution, either in the form of a syrup, tincture, or elixir. Even the iron reduced by hydrogen, which is unquestionably the best restorer of iron to the blood, is comparatively little used. The proto-carbonate still holds the preference of the gray-headed members of the fraternity, while the soluble scaled salts with ammonium-citrate are preferred by the younger members of the profession; the choice is between the citrate and pyrophosphate, with perhaps a predominating preference for the latter. The bibasic phosphate constitutes the iron ingredient in nearly all the proprietary elixirs, sold under the names of Elixir Phosphate of Iron, Quinia, and Strychnia; Elixir of Calisaya ferrated, and Elixir of Gentian; the tribasic phosphate being ill-adapted for the purpose, and a solution in an alcoholic menstruum being very unstable.

The theory, or theories, upon which the phosphates and hypophosphites have grown into the esteem of the medical world may thus be briefly stated: Phosphorus, as is well known, is an important element in the brain and nervous system, the expression, "thoughts that burn," being a physiological fact as well as a poetic figure. Dr. Churchill, an American physician practising in the capital of France, conceived the idea that phthisis pulmonalis emanated from a deficiency of phosphorus in the system. This deficiency he proposed to remedy by introducing phosphorus into the system by means of hypophosphorus acid in the salts of lime and soda. The idea was fascinating, and infatuated a very large portion of the profession. They dreamed that the hitherto relentless upas of human existence was at length mastered, that no longer was its touch withering and its impress death, but that under the life-giving power of the hypophosphites the hectic flush would depart, the cough cease, the emaciated frame resume its former proportions, and as the cause upon which these accrued was removed, health and strength would be restored, and science would, indeed, be triumphant over the foe which heretofore had baffled human skill, and annually consigned to the grave the beautiful and lovely of earth. This beautiful dream, however, proved delusive; consumption still continued its ravages, and the hypophosphites were found to be less efficient than cod-liver oil, yet capable of greatly enhancing the curative power of the latter. But if the hypophosphites did not confirm those high hopes and lofty expectations, they proved to be a powerful remedial combination, capable of giving beneficial results, in wasting diseases hitherto unattained by any known agent. They yet retain the esteem of very many intelligent physicians, although, I believe, the present estimate of them is below their intrinsic value. The formulas for their preparation having been published in Parrish's Pharmacy, and as I presume every physician and pharmacist has a copy of this indispensable book, it is unnecessary to copy them here. A preparation I have long esteemed, containing

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two grains of the hypophosphite of iron, one grain of the hypophosphite of quinia, and one-forty-eighth of a grain of the hypophosphite of strychnia in each drachm, I make thus :—

℞ Ferri hypophosph.....grs. 192.
Quiniæ (alkaloid fresh).....grs. 96.
Strychniæ .....grs. ij.
Acid hypophosph.....grs. i.
Syrupi, q. s .....ʒ xij.

Take the freshly precipitated hypophosphite of iron, the freshly precipitated quinia, and the strychnia, and add sufficient hypophosphorous acid to form a solution; mix it with sufficient syrup to measure twelve ounces; bottle and carefully cork. This preparation is a very valuable tonic, and seems to me to be more important than any other combination of the hypophosphites. Mixed with equal parts of the syrup of soda and lime hypophosphites, its value seems to be greately enhanced. Sometimes combined in equal proportions with the syrup of the hypophosphite of manganese, it proves a powerful restorer of lost strength and vigor.

This formula has proved sometimes very satisfactory :—

℞. Ferri hypophosph.....scr. ij.
Manganesii hypophosph .....scr. i.
Quiniæ.....scr. i

Divide into twenty pills. Take one pill three times a day.

During the summer of 1857 I devoted especial attention to the study of tuberculosis, and having imbibed the doctrines of Dr. Paine, of the University of New York, directed my attention to the brain and nervous system, with especial regard to their influence over the respiratory system. Analyses of twenty autopsies of the victims of phthisis gave evidence of a marked diminution of the amount of phosphorus in the brain and nervous system, with apparent atrophy of the cerebellum, medulla oblongata, and pneumogastric nerves.

I also found that the excretion of the phosphates was very large during the progress of phthisis, and that whatever arrested the progress of the disease also diminished the quantity of these in the urine. I inferred from this that the pathological lesion consisted in some aberration, not of the phosphorus assimilating, but of the phosphatic eliminating function, and intimately connected with the functions of the pneumo gastric nerve, spinal accessory, phrenic, and hypoglossal nerves. I became convinced that the seat of the disease was in the medulla oblongata; that through the pneumogastric nerve was transmitted, as by a telegraph wire, the morbid impression by which the digestive and assimilating function became impaired, and the tubercle originated in the lungs. It also appeared very probable that the great sympathetic was also deeply involved

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in this trouble, and contributed a liberal share of the fatal agency. While I regarded the diminution of phosphorus in the system in tubercular consumption as a concomitant and a coincident intimately interwoven with the origin of the disease, I have never viewed it as the disease per se; *autochthonic* in itself complete, and as to the cause sufficient, irrespective of co-operating and co-ordinating powers, impressions or influences. I, nevertheless, deemed it proper to resort to the use of phosphoric acid with a twofold purpose, to secure the tonic influence on the digestive powers, and the nerve-stimulant effect it so promptly gives, hoping thus to reach important indications. Fifteen years' experience has justified my view. A very similar combination to one now highly esteemed was formed. Out of my speculating grew my sprup of the phosphate of iron, quinia, and strychnia, which, although not filling my early sanguine expectations, is yet highly valued by myself and a dozen or more physicians. I prepared it thus:—

℞. Sulphate of iron.....grs. 800
Phosphate of sodium .....grs. 1280
Sulphate of quinia .....grs. 384
Dilute sulphuric acid.....q. s.
Aqua ammonia .....q. s.
Strychnia .....grs. 10½
Syrupy phosphoric acid.....℥ iij.
Syrup sufficient to make.....℥ xxxij.

Dissolve the sulphate of iron in three ounces of boiling water, and the phosphate of sodium in six ounces of boiling water. Mix them and wash the precipitated phosphate of iron until the washings cease to be effected by a solution of the chloride of barium. Dissolve the quinia sulphate and the strychnia in two ounces of water by aid of dilute sulphuric acid, and precipitate the alkaloids by slowly adding ammonia water, and carefully wash them. Rub the phosphate of iron, quinia, and strychnia with four ounces of water, add the syrupy phosphoric acid and dissolve them. Then filter the solution into sufficient syrup to make thirty-two fluid ounces. In the formula published in *The Druggists' Circular* it is directed that the syrupy phosphoric acid be mixed in ℥ xvi. of distilled water, the iron, quinia, and strychnia dissolved in the solution, and ℥ xviij + ℥ ij. of sugar be added.

The formula here given produces rather a finer pharmaceutical product, and seems less impressible to atmospheric exposure. The formula given in the *The Druggists' Circular*, however, will produce *quite satisfactory results* and answer every purpose. Easton's formula, published originally in Aitken's Practice of Medicine, and by some erroneously called Aitken's formula, is prepared thus:—

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℞ Sulphate of iron.....3v.
Phosphate of soda.....ʒi.
Quinia sulphate .....grs. 192
Dilute sulphuric acid.....sufficient.
Aqua ammonia .....sufficient.
Strychnia.....grs. vi.
White Sugar .....ʒ xiv.
Dilute phosphoric acid.....ʒ xiv.

Dissolve the sulphate of iron in one ounce of boiling water, and the phosphate of soda in two ounces of boiling water. Mix them and wash the precipitated phosphate of iron until the washings are nearly tasteless. Dissolve the sulphate of quinia in two ounces of water by the aid of dilute sulphuric acid, and precipitate the quinia by aqua ammonia, and carefully wash it. Dissolve the phosphate of iron and the quinia thus obtained, as also the strychnia, in the dilute phosphoric acid; then add the sugar and dissolve the whole without heat.

This formula, the one having semi-officinal recognition, is somewhat defective, and precipitates the iron in a few weeks, so as to modify its therapeutical powers, and seriously impair its pharmaceutical beauty. The dilute phosphoric acid is not sufficient to dissolve the iron, quinia, strychnia, and sugar, and hold them in perfect solution; the amount of sugar is not sufficient to preserve the preparation from deterioration by age and atmospheric influences, while the preparation by the above formula of mine seems to be free from these objections.

Being desirous of forming a concentrated syrup of much greater strength than the above, so as to be more convenient for use on the tented field, I devised the following formula in 1864:—

℞. Freshly prec. phos. of iron. grs. 600
Quinia freshly precipitated. grs. 96
Strychnia. . . . grs. iij.
Syrupy phosphoric acid. . f. ʒ iv.
Water. . . . . ʒ xiv.
Syrup (very dense), q. s. ad f. ʒ xij.

Mix the phosphate of iron, quinia, and strychnia in the syrupy phosphoric acid previously diluted with fourteen drachms of water, and dissolve them. Add sufficient syrup to measure twelve fluid ounces, and bottle with a tight fitting stopper, so as to exclude the air entirely.

Each drachm will represent above five grains of the ferrous phosphate, one grain of the quinia, and one-thirty-second of a grain of strychnia phosphate. There are about three grains of free phosphoric acid and about ten grains in basic combination of the same. Although a good preparation for an army surgeon, it is rather too

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powerful for private practice. Outside of my military practice I have never used it, although it was a great favorite of mine in the army hospitals.

In compliance with the wishes of several physicians, Mr. Theodore A. Polk, of Seaford, Delaware, prepares the syrup thus:—

℞	Freshly prec. phos. of iron.	grs. 192
	Phosphate of quinia. .	grs. 64
	Strychnia. . . .	grs. 2
	Dilute phosphoric acid .	ʒ x.
	Sugar.	℥ viij.
	Essent. tinct. orange . .	ʒ iij.
	Oil of cardamon. . .	gtt. viij.

Dissolve the phosphates of iron, quinia, and strychnia in the dilute phosphoric acid. Rub the essential tincture of orange and of cardamon with the sugar. Mix all together and dissolve without heat.

Mr. Charles Bullock, of Philadelphia, has proposed a formula which may merit at least a passing notice. The articles and quantity are precisely the same as in Easton's formula. He dissolves the iron and soda in an unnessarily large quantity of water, and thereby gets a magma rather difficult to wash. His mode of washing on paper-filters has, in many hands, ever proved a very unsatisfactory and annoying process, universally attended with heavy loss. The filters are apt to tear, and portions of the magma will adhere to them. He also dissolves the iron in six ounces of the dilute phosphoric acid and the alkaloids in the remaining eight ounces of the phosphoric acid, and mixes the solutions, then filters, or rather he proposes to filter, through paper, after dissolving the sugar in the solution. By this means the almost unavoidable atmospheric exposure will impair the preparation. The precipitate is generally copious, and discoloration speedily evinced. Of course I speak of my own manipulations of the formula, *which, in my hands, has proved a complete failure.*

LACTO-PHOSPHATE OF IRON AND LIME.

℞	Freshly prec. phos. of iron.	ʒ iij.
	Syrupy phosphoric acid. . .	ʒ vi.
	Concentrated lactic acid. . .	℥ ij.
	Freshly prec. phos. of lime .	℥ iij.
	Syrup of orange-flowers, q. s.	ʒ xij.

Add the phosphate of iron to the syrupy phosphoric acid, previously diluted with two ounces of the orange-flower syrup. Mix the phosphate of lime with the concentrated lactic acid, previously diluted with two ounces of orange-flower syrup, and dissolve. Lastly, mix the two solutions together and add sufficient syrup to measure twelve ounces.

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I believe this formula, or a similar one, is destined, at no remote day, to attain the very zenith of professional confidence. I believe it possesses rare intrinsic merit, and embodies curative powers unequalled in certain forms of debility. In convalescence from acute diseases it promises much. Phosphate of lime is well known to be an important element in the human organism, a real essential in the phenomenon of life. Experiments made of depriving animals of it, by removing it from their food, have been attended with rapid prostration and exhaustion, while the restoration to the food restored them to their former condition. The waste of the phosphate of lime is very great during fevers and inflamations, and the depleted organism demands its restoration. True, nearly every article of food contains it in a greater or less degree, yet the stomach is weak, the digestive and assimilative powers impaired. The emaciated frame demands it in a more readily assimilable form, and this very condition is very excellently filled in the syrup of the lacto-phosphate of iron and lime. If given with an elixir of cinchona, like that published in the December number of the *Medical and Surgical Reporter*, the result would be greatly enhanced.

(*To be Continued.*)

ON THE SOLVENT POWER OF ANHYDROUS LIQUID AMMONIA.*

Professor Charles A. Seely, of New York, states that he has made the discovery that ammonia has a solvent power upon certain metals, and that he has actually succeeded in obtaining a solution of sodium in liquid ammonia. This solution presents all the physical characteristics of a true solution. On evaporation the sodium is gradually restored to the metallic state in the same continuous manner in which the solution has been effected. The color of the solution is a very intense blue, and its opacity or high tinctorial power is urged as an argument in favor of the notion that the metal is in simple solution. Weyl had made the capital discovery that when gaseous ammonia is condensed by pressure and cold on sodium, a blue liquid is the product, but he had mistaken the nature of this product. Professor Seely has experimented on various substances, and has concluded that ammonia is not only a solvent of sodium, but that other metals can be dissolved in ammonia, and the details of his experiments in confirmation of these views will be the subject of another paper.

Chemical News.*

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SOLANINE IN POTATOES AND POTATO SHOOTS.*

Solanine is an organic base or alkaloid discovered in 1820 by Desfosses in the berries of the black nightshade, (*solanum nigrum,*) from which it takes its name. It is also found in small quantities in the tubers and green parts of the potato. It is very poisonous, two or three grains being sufficient to kill a rabbit in a few hours, first, however, producing paralysis of the hinder extremities. The same symptom has been observed in oxen after eating potato shoots.

O. Bach has instituted a series of experiments with sprouted potatoes to ascertain whether this poisonous akaloid is present in the potato itself, and, if so, where. His results prove that in both boiled and raw potatoes solanine is found only in the skin and at the base of the sprout. In water, whether fresh or salt, in which potatoes has been boiled, he could find but slight traces of solanine, after evaporating down large quantities of it. Even when boiled for six hours the result was the same. The presence of solanine in the skin was easily proved. Whether, as some suppose, this alkaloid is distributed throughout the plant, and whether fresh potatoes contain it or whether it is generated during germination, this chemist does not decide.

Bach found the best reagent for testing for solanine to be a mixture of sulphuric acid and alcohol. The smallest quantity of solanine gives with this reagent a beautiful rose or cherry red. The most beautiful color is obtained by mixing equal volumes of sulphuric acid (sp. gr. 1.84) and alcohol, and adding a little solanine while the mixture is still warm. This reaction is remarkable for the permanence of the color, which does not fade for five or six hours. The presence of a large quantity of morphine does not interfere with this reaction, which is the more important because, in judicial testing for alkaloids according to Stas' method, morphine and solanine are the only alkaloids not taken up by ether from acid, or from alkaline solutions.

To obtain pure solanaine, Reuberg boils fresh potato shoots in water slightly acidulated with sulphuric acid; the rapidly expressed liquid is precipitated, while still warm, by ammonia; the dried precipitate is exhausted with boiling alcohol, and the solanine, which separates almost completely on cooling, is several times crystallized from alcohol, till it dissolves in hydrochloric acid without turbidity. According to Kromayer, is is most easily obtained by precipitating the expressed juice of the potato germs with lime, without using acid, and exhausting the precipitate with alcohol.

* Journal of Applied Chemistry.

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EXTRACTUM IPECACUANHÆ FLUIDUM.*

BY RICHARD V. MATTISON.

The preparation of this extract is attended with some difficulty, and seems to have been a source of annoyance to our Pharmacopœia authorities. The last selection (U. S. P., 1870) is unfortunate in furnishing a product very thick and inelegant, though no doubt fully representing all the medical properties of the root.

When this extract is prepared according to the present formula, and diluted with syrup, as the Pharmacopœia directs, the result is a turbid syrup—the abhorrence alike of patients, physicians and pharmacists.

This proving very unsatisfactory in these days of elegant pharmacy, I, in accordance with the suggestion of Prof. J. M. Maisch, instituted a series of experiments, which resulted in the selection of the following formula:

Take eighty troy-ounces of carefully selected ipecac root, grind to appropriate powder, and, after moistening thoroughly, pack firmly in a cylindrical glass percolater, allow to stand four days as directed, then using the official menstruum, allow percolation to proceed slowly until the root is exhausted. To the percolate add ten fluid-ounces of glycerin, and evaporate at a temperature not exceeding 140° Fahr. (if the temperature is allowed to rise higher, a gelatinous mass will result) until reduced to the measure of fifty-five fluid-ounces. Transfer this to a moistened filter and allow to drain. To the soft mass remaining upon the filter, consisting of the peculiar substance usually called resin (though not so, properly speaking), water is added by means of a spritz, and the whole thoroughly washed until the filtrate measures sixty fluid-ounces. This causes a reprecipitation of the resinous substance, which necessitates the refiltration of the filtrate. To this second filtrate twenty fluid-ounces of glycerin is added, and the whole well mixed.

This furnishes an extract containing in each pint two fluid-ounces less of glycerin than the official preparation, limpid, perfectly transparent, and one that can be mixed with syrup without turpidity, and in this respect will, I doubt not, meet the approval of all lovers of elegant pharmacy.

Philadelphia, Tenth month 10th, 1873.

* From the American Journal of Pharmacy.

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Editorial.

COUNCIL MEETING.

The regular semi-annual meeting of the Council will be held on Wednesday, the 4th instant. It is hoped that there will be a full attendance, as, in addition to ordinary business, the question of amendments to the Pharmacy Act will come up for discussion, and, if anything is to be done during the present session of the Legislature, will have to be definitely settled.

The semi-annual examination takes place on the day preceding the meeting. The entries are more numerous than on any previous occasion—twenty-one candidates having, already, registered their names. The examination will be held, as usual, in the lecture room of the College of Technology.

MEDICAL LEGISLATION EXTRAORDINARY.

Under the existing Medical Act, the Homœopathists of Ontario are entitled to rights and privileges at least equal to those enjoyed by practitioners belonging to the regular school. In the Medical Council they have a greater proportional number of representatives, and the Board of Examiners is, in part, composed of persons chosen from their ranks. Allopath and Homœopath are alike required to pass examination in those subjects which are common to both schools, while, in special branches, such as the theory and practice of medicine, in regard to which the views of the two schools differ, the homœopath is privileged to be examined according to his own views, and by those of his own school. If the Medical Act favors one side more than the other the homœopaths have decidedly the best of it. Not only are they dealt with in a spirit of fairness, if not leniency, but, as will be at once acknowledged, they derive incalculable advantages from being legally ranked with men, who, as a class, are vastly superior in social and professional position.

It would naturally be thought that, to the homœopaths, this

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state of things would be highly satisfactory. Strangely enough, the reverse has turned out to be the case. Harassed by educational restrictions, to which they were unused, and which would fain be overleaped; brought into contact with associations which have proved the most uncongenial; and cherishing among their number the master spirit of jealousy and discontent, they have merged from a spirit of disaffection to that of open rebellion, and now seek not only to cut themselves loose from existing regulations, but to create for themselves a new law, after the design of their own hearts.

This attempt, in the shape of the draft of a Bill to be known as "The Ontario Homœopathic Act" is now before us, and during the present session of the legislature will be presented for discussion.

It will not be necessary for us to review the details of this proposed measure. We do not, indeed, intend to do more to direct attention to some of the more prominent clauses, which, were they to become law, would endanger the public safety, and tend to the utter debasement of a class, which, for purposes of good government, it is necessary to recognize as forming an integrant part of the medical profession.

It will be necessary to explain that the Bill provides for the organization of the "Homœopathic College of Physicians and Surgeons," and that the powers of this body are vested in a Council consisting of six members; that the meetings of this body are to be of a secret character, even members of the college being excluded; that the council may appoint examiners, who shall report on the fitness of candidates for membership, and that "it shall be lawful for the President, with the consent of the Council, thereupon to grant the Diploma of the College to such candidate, who shall thereby become, and thenceforward be, and be held to be, a Member of the College, and entitled to use the name and designation of "Doctor of Medicine" and any abbreviation thereof, in the Province of Ontario; the Diploma of the College shall be authenticated by the signature of the President, and the seal of the College being appended thereto."

In addition to conferring the degree of M. D., the Council also possess the licensing power, and the newly fledged doctor could snap his fingers at the existing licensing body, and, at once, enter upon the practice of his occupation. It will be seen that the Homœopathic Council would possess privileges greater than those of any University in the country, and would be hampered with very few of

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the restrictions which teaching or examining bodies have to regard. The time for passing the matriculation examination is not fixed, nor is it even required that any specified time be passed in study, subsequent to assuming the degree of M. D.

The whole affair savors very strongly of a Canadian development of the Diploma Shop business, and in this opinion we do not stand alone. The Canada *Lancet* in alluding to this subject says:

"The only members of the Homœopathic body who would be benefitted by the passage of this outrageous bill would be the fortunate members of the Council who would fatten on the fees extracted from the candidates who came before them for license to practice. We have no doubt it would be a paying concern, if we may judge from the management of the old Homœopathic Board during the last year of its existence, and we have every reason to believe that the same thing would be repeated on a larger scale. The most serious feature of the whole matter is that such legislation, in whatever shape it may be put, strikes a fatal blow at the groundwork of medical education in Canada, and will once more throw us back into the chaos of the past, when eight or ten different institutions in the Province had power to grant license to practice. If the Legislature in its wisdom should see fit to grant a separate charter to the Homœopaths, they cannot refuse the same privileges to the Hydropaths, Clairvoyants, Mesmerists, &c., &c. The medical colleges of Ontario too, that have surrendered their powers to confer the license upon candidates in medicine will ask to have these rights restored. Other colleges will spring up, and the effect will be to lower the standard of medical education, destroy public confidence in our educational institutions, and prove disastrous alike to the public and to the profession."

THE ADULTERATION CRUSADE IN ENGLAND.

Following closely upon the prosecution of a London druggist for selling adulterated, or rather, factitious citrate of magnesia—the details of which case appeared in our last number—we have now another sensation in the form of an attempt to prosecute a number of pharmacists for selling adulterated spirit of nitrous ether. An inspector procured, from various druggists, a number of samples of this preparation. These were submitted to Dr. Dupre, an official analyst, who, of course, found them to contain a large proportion of spirit and a slight admixture of water. As far as we have been able to gather from the details of a very confused and mixed-up case, it

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was contended that these liquids should be regarded in the light of adulterants.

The evidence in the case is very amusing, and that of the analyst particularly so. Harassed with innumerable questions by the opposing counsel, and vainly trying to render comprehensible, to the presiding magistrate, the *rationale* of the chemical changes which are involved in the manufacture of nitrous ether, he appears to have had a very perplexing time of it. A point of peculiar difficulty was that relating to the action of the nitric and sulphuric acids, and the copper, which, in the form of wire, is one of the ingredients in the pharmacopœial process. The magistrate thought that as the analyst had been unable to detect the presence of these acids in the samples of spirit of nitrous ether examined, that it was a case of deficiency rather than adulteration. This point having been explained, a fresh inquiry was set up by the opposing counsel, who pertinaciously pressed for the copper wire.

Mr. Charles Umney, F.C.S. director of the laboratory of Messrs. Herrings & Co., where the sample of spirits of nitre, then under question, was obtained, stated the method of manufacture to be different to that given in the Pharmacopœia of 1867. They had tried that process, their customers were not satisfied with the product, and, consequently, they had to fall back on the method which, for a great number of years, they had successfully followed. This consisted in drawing over, from a mixture of six gallons of alcohol and four pounds of nitric acid, a distillate weighing fifty pounds. This preparation had for centuries been known as sweet spirits of nitre.

After very lengthy evidence, the case was dismissed, costs being allowed to each of the four defendants. The grounds of this decision were that spirits of nitre was not a drug as coming within the meaning of the Adulteration Act; and that the different method of manufacture did not constitute an adulteration. Another consideration of weight was that the samples obtained were procured as "sweet spirit of nitre," while the parties were prosecuted as having sold "spirit of nitrous ether." This, of course, involved a legal difficulty, and one also based on justice, for it may well be contended that the article produced by the distillation of spirit and acid, is much better entitled to the popular and well-known designation, "sweet spirits of nitre," then the more recent and unsatisfactory product of the Pharmacopœia.

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The decision that sweet spirit of nitre is one thing and spirit of nitrous ether another, is, however, applicable to circumstances other than those involved in the case alluded to. If these articles are dissimilar they cannot be mutually interchanged, when one or the other may be ordered by prescription. If Sp. Ætheris Nitrosi B. P. is ordered, it is the duty of the dispenser to use that prepared by the officinal process; or as stated in the preface to the Pharmacopœia, by other satisfactory process "by which a product may be obtained that will accord with the description and tests given for identification." The test of strength for the spirit of nitrous ether is that, under certain treatment, it must yield two per cent of ether. This is the point which we must bear in mind, and though it may be perfectly legitimate to sell, as sweet spirit of nitre, a preparation containing 0·83 per cent of nitrous ether—as that in the case referred to was proved to contain—it is not legitimate for us to use such a spirit when that of the Pharmacopœia is indicated.

PHARMACEUTICAL EXAMINATION AT MONTREAL.

The Council of the Pharmaceutical Association of the Province of Quebec, in response to several applications, have decided upon holding their examination on the 21st and 22nd of the present month.

Editorial Summary.

Action of the Cinchona Alkaloids and other Substances upon Bacteria and Colorless Blood Corpuscles.—In the *Pharmaceutical Journal & Transactions* is an extract of a paper by Dr. E. B. Baxter, which originally appeared in the *Practitioner*, and which contains the results of an extended series of experiments on the subject above indicated. Omitting all details, the conclusions arrived at, as given by the author, are as follows:

1. Quinine is doubtless excelled by other antiseptics, but there is no substance equal to it in antiseptic power which can be introduced into the blood in the same proportions without risk of fatal

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effects, if we except the other cinchona alkaloids and the sulphate of beberia. 2. Quinine, in such fractional doses as are capable of being introduced into the circulation, exerts an inhibitory, not a toxic, action upon microzymes. It *may* check septic changes; it cannot destroy the organisms to which such changes are due. 3. The four cinchona alkaloids are very nearly equal in antiseptic power. 5. Among reputed antiperiodics, the sulphate of beberia seems to equal quinine in antiseptic power. 6. Among reputed antiseptics, sodic sulphocarbolate and strychnine have a decided value, though they stand some way below quinine. 7. Sodic sulphite has a feeble, though decided, antiseptic power; sodic hyposulphite little or none. 8. Berberin and æsculin are hardly, if at all, antiseptic. 9. Potassic picrate is a strong antiseptic, almost, if not quite, equal to quinine. It is doubtful, however, whether it can be administered in sufficient doses without danger to life. 10. The action of inhibitory drugs on the vitality of microzymes affords no clue to their action on *Penicillium*. Substances like mercuric chloride, which are immediately fatal to the former, arrest the growth of the latter when employed in the same minute proportions. The action of quinine on the colorless corpuscles of the blood has been studied, but the author thought it desirable to test the various cinchona alkaloids and compare their action with that of other substances. Comparative experiments were therefore made upon the blood corpuscles of the newt, the drugs employed being the hydrochlorates of the four cinchona alkaloids, potassic picrate. æsculin, sulphate of beberia, and nitrate of strychnia. The four cinchona alkaloids, in the proportion of 1 in 1500, were found to speedily arrest the migratory movement of the colorless corpuscles, quinine appearing to stand first in order of power. Sulphate of beberia, which approached them so closely in antiseptic power, rivalled them also as an antiphlogistic. Strychnine had some influence upon the corpuscles, but very much less than the cinchona alkaloids or beberia. Potassic picrate, almost equalling the cinchona alkaloids as an antiseptic, exerted a comparatively feeble influence over the movements of the colorless corpuscles, indicating that the antiseptic and antiphlogistic properties of a drug are not necessarily connected with each other. Æsculin exerted no very marked influence upon their activity.

Cosmolin.—This petroleum product, which has lately been put into the market by the oil refiners, has been made the subject of some experiments by Dr. A. W. Miller, who detailed the results at a late meeting of the American Pharmaceutical Association. (*Am. Jour. Pharm.*) From the most reliable information which the author was able to obtain it appears that the cosmoline is made by distilling crude petroleum so as to remove, successively, the gasolin,

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benzin, burning oils, and the lighter machine oils. The residuum is then subjected to greater heat, and its vapor is brought into contact with a jet of superheated steam, by which the last traces of light hydrocarbons are removed. A further treatment with animal-charcoal renders the product less odorous. From the manner of preparation the author concludes that cosmolin is simply impure paraffin, or a mixture of paraffin and the heavy oils nearest allied to it. As cosmolin appears to possess some merits, and is certainly gaining favor with the physicians, and as the manufacturers ask an exorbitant price for it, the author proposes to form a similar substance by mixing paraffin with the so-called neutral oil. The latter product is of a density of 32° or 33°, and boils at about 500° C. Before mixing with the paraffin it may be deodorized by percolation through hot animal charcoal. One part of paraffin to three of oil give a product strongly resembling cosmolin. The author does not recommend this formula as the best that can be devised, but merely makes the suggestion for the purpose of directing enquiry to the subject.

Variable Strength of Commercial Hydrocyanic Acid.—Mr. A. Towerzey, (*Pharm. Journ. & Trans.*, Dec. 27th,) gives the result of an examination of nine samples of commercial hydrocyanic acid, which were all supposed to be of B. P. strength. None of them, however, came up to this standard, but ranged from 1.92 to 0.20 per cent. Three samples Scheele's acid were also examined. They gave respectively 3.62, 4.02 and 1.30 of real acid, instead of 5 per cent., the recognized standard for this preparation. In view of this uncertainty and instability of the medicinal acid, the author suggests the use of some other cyanide than that of hydrogen. The double cyanide of zinc and potassium is named. This is a definite crystalline body, not containing water, and so stable as to bear fusion without being decomposed. The hydrocyanic acid it contains is, however, easily evolved by weak acids, such, for instance, as may be presumed to exist in the stomach. The double salt may be easily prepared by dissolving cyanide of zinc in a solution of cyanide of potassium—one equivalent of the former to two of the latter. Octahedral crystals are obtained on evaporation, a solution equal in hydrocyanic strength to the B. P. acid, is formed by dissolving 2 parts of the salt in 42.82 parts of water.

Druggist's Assistants in Berlin.—The German correspondent of the *Chemist and Druggist*, writing from Berlin, says that in that city the assistants universally live in the house of the principal, and until within the last few years it was usual for them to take

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meals also at his table. Of late years, however, it has become frequent for a certain amount to be allowed for dinner and supper, which are taken at a restaurant. One hour has been generally allowed for dinner. Each assistant gets three evenings a week after six o'clock, and business closes at ten. One sleeps close by the shop; but the assistants are not quite contented with these arrangements, and have been agitating for one hour and a-half for dinner, an hour earlier for closing, and extra pay for night work. They want the charge for prescriptions at night to be doubled, they themselves to receive the half of the extra payment. At present there is not much prospect of the realization of their demands.

Show Carboy of Three Colors.—A correspondent of the *Druggist* says that he has exhibited, for over a year, a show carboy which has been much admired It contains three strata of liquid; the lowest, water; the second, oil that will not congeal in winter; the upper strata, water. These are each tinctured with a different color. The colors used are not stated, but it will be necessary to avoid those which are chemically incompatible.

Books and Pamphlets.

PHARMACOPŒIA GERMANICA; The German Pharmacopœia. Translated by C. L. LOCKMAN; With an Appendix explanatory of the French Metrical System, and Tables of Weights, Measures, etc. Philadelphia; David D. Elder & Co., Philadelphia, 1873, 12mo., pp. 394.

The original of the work before us was published in 1872, under the authority of the Federal Council of the German Empire. Previous to that time several pharmacopœias were in use, amongst others, the *Pharmacopœa Germaniæ*—which was compiled by the Pharmaceutical Societies of North and South Germany, and was the initiatory step towards the formation of the present work—the Prussian Pharmacopœia, and those of the States of South Germany. To remedy the inconveniences attendant on such a multiplicity of authorities, a committee assembled, in 1869, for the purpose of collecting, revising, selecting and reconciling the various formulas contained in the works referred to. This enterprise was interrupted by the operations of the war, but, after the establishment of the German

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Empire, was again taken up, and ultimately resulted in the production of the pesent work.

In general style, arrangement, and extent of detail, the *Pharmacopœia Germanica* closely resembles that of Great Britain, but the former work is in the Latin language. Of course it embraces many preparations to which we are unused, and not likely to become very familiar, but there are also numerous compounds of considerable pharmaceutical interest. with which we might, with advantage, become acquainted. A noted improvement is the abandonment of measures of capacity in the estimation of liquids; all quantities are expressed by weight, according to the metrical system; and, in the translation under revision, are rendered by parts.

Various useful tables are given at the close of the volume, amongst others, one designating the maximum doses, for adults, which the physician must not exceed in his prescription, when the medicine is intended for external use, except he adds the exclamation point (!). A second table contains the names of medicines which are usually called poisons, and which are required to be preserved very carefully, in closed apartments. This is followed by a table of medicines, which must be preserved cautiously, and separate from all others. The specific gravities of the officinal liquid preparations are given in tabular form; and there is also a table of alcoholometrical equivalents.

As far as we have been able to judge, the translation before us is, in all respects, a very creditable one, and likely to be very useful. To those located in settlements where the German element prevails this book will be a necessary counter companion, and pharmacists generally will derive much interest and instruction from its perusal.

In addition to the matter of the original work, the translator has added several useful tables relating to the intermutation of degrees of temperature, and denominations of weights of various systems; and, in the English translation of officinal names, especially of those of chemicals, has brought the nomenclature as nearly as possible to that adopted in the United States Pharmacopœia of 1870.

The typographical execution of this work is very good; its general style is almost identical with that of the edition of the U. S. Pharmacopœia of 1870. The price is $2.25, American currrency.

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Transactions of Pharmaceutical Colleges and Societies.

MONTREAL COLLEGE OF PHARMACY.

The regular monthly meeting of the college was held on Thursday January 8th, the President, Mr. H. R. Gray, in the chair. The Secretary, Mr. James Mattinson, read the minutes of the previous meeting, and announced a donation, from Mr. H. F. Jackson, of a nicely mounted botanical map of the world; and two fine specimens of tea plants from Mr. Chas. E. Smallwood. The usual business having been disposed of, Mr. Hoffman, chemist to the Geological Survey, was called upon for his lecture on the "Cactus Family." The lecturer commenced by giving a general description of the cactus family, in the course of which allusion was made to the extraordinary beauty of the flowers of some of its members; the delicious flavor of the fruits of others, and the immense number of spines with which some of these plants are covered. Passing on, certain genera were selected as illustrative of the most characteristic forms of these plants; a general description of these genera having been given, one or more of the members of each was spoken of in detail. Alluding to the enormous growth attained by some of the order of the *Cerei*, the *Cereus giganteus* was said to attain a height of from fifty to sixty feet; of the *Echinocacti*, the *Echinocati Visnaga* had been known to measure nine feet in height by three in diameter. Of the *Pilocereus senilis* it was stated that in old plants not less than 60 to 80 per cent. of oxalate of lime had been found in individual stems—the lecturer here spoke at length upon the occurrence of oxalic acid in the vegetable kingdom. Some species of *Opuntia* and *Nopalea* were next brought under notice. An account was given of those insects which furnish a dye stuff, in which the cochineal was especially dwelt upon, a detailed account of its propagation being given. The lecture concluded with a description of some species of the genus *Pereskia*, a genus unlike the rest of the order in that its species possess leaves. At the conclusion of the lecture a vote of thanks was proposed by Mr. Lyman, and seconded by Mr. Jackson. Mr. S. L. Lyman's remarks on the Night Blooming Cereus, a member of the Cactus family, was listened to with great interest. An interesting lecture is promised for next month.

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Varieties.

GUARANA IN SICK-HEADACHE AND THE EXCITEMENT OF EPILEPSY.—Dr. W. Macdowal, of Edinburgh, contributes an article to *The Practitioner* of Sept. on the effects of this drug. He had uniform success in relieving sick-headache in a number of cases, the dose being a half to one drachm, and in some cases of excitement due to epilepsy a drachm of drug would produce pallor of the face and quietude for one or two hours, but the effect was transitory and by no means equal to that of ergot. In experiments upon himself and other healthy persons, Dr. Macdowal observed that guarana will completely prevent the fulness of the head, lassitude and sleepiness following a full meal.—*New Remedies.*

THE INK OF THE ANCIENTS.—In a letter from Mr. Joseph Ellis of Brighton, addressed to the *Society of Arts Journal*, he states that in making a solution of shellac with borax in water, and adding a suitable proportion of pure lamp-black, an ink is produced which is indistructible by time or chemical agents, and whi h on drying will produce a polished surface, as with the ink found on Egyptian papyri. He made ink in the way described, and proved, if not its identity with that of ancient Egypt, yet the correctness of the formula, which was given him by the late Mr. Hackett.—*New Remedies.*

SOLUBILITY OF ARSENIOUS ACID IN WATER.—Buchner reports (*Neues Rep. f. Pharm.*, xxii., 265) that amorphous arsenious acid is more soluble than crystalline. The experiments were made by shaking with cold water, and allowing to stand for twenty-four hours, when it was found that the solubility of the amorphous variety was 1 in 108, and of the crystalline 1 in 355. Treated with boiling water and allowed to stand for twenty-four hours at 15° C., their respective solubilities were,—Amorphous acid, 1 in 30 parts of water; crystalline acid, 1 in 46 parts.—*Phar. Jour. & Trans.*

THE SULPHURIC ACID MANUFACTURE.—During the late meeting of the French Association for the advancement of Science, at Lyons, M. Aime Girard gave an interesting lecture on the modern process of chemical industry. He first discoursed on sulphuric acid, and traced the growth and importance of this manufacture. Forty years' ago, twenty million kilogrammes of sulphur sufficed to provide for all the sulphuric acid manufactured. Now, if sulphur were employed, two hundred and fifty millions of kilogrammes would be necessary. But sulphur has been discarded in favor of iron pyrites as the base of the manufacture. These were first experimented on for the purpose by D'Artigues, in 1793, at the time when France was cut off from all the rest of Europe. But he failed, and a similar result awaited some English experimenters about the year 1818. Ultimately at Lyons itself the desired end was accomplished by the sulphuric acid manufactory there in 1830. At this time M. Girard reckons the annual production of concentrated sulphuric acid throughout Europe does not fall short of 800 millions of kilogrammes. He stated that this quantity would fill a canal 2 metres deep, 10 metres broad, and nearly 30 kilometres long.

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PRESENCE OF SUGAR AND TARTARIC ACID IN VINE LEAVES.—In a note presented to the French Academy in 1869, M. Petit stated that vine-leaves contained 20 to 30 grams per kilogram of glucose, and a quantity of acid varying from 13 to 16 grams. In further investigating the subject M. Petit has found (*Rép. de Pharmacie*, new series, i., 632) that about one-third of this acid is tartaric acid, which exists in the state of cream of tartar. He has also found that much sugar is present as cane sugar, and in taking special precautions to prevent the conversion of the cane sugar into glucose, he obtained from a kilogram of vine leaves—cane sugar, 15·80 grams; glucose, 17·49 grams. The leaves of the cherry and the peach also contain a mixture of cane sugar and glucose, and from a kilogram of peach leaves he obtained—cane sugar, 33 grams; glucose, 12 grams.—*Phar. Jour. & Trans.*

CHEMICAL GASES AND HEALTH.—Dr. Angus Smith has been studying the gaseous effluvia of chemical works in relation to public health. There have been many opinions as to the distances which gases will travel. He thinks we may be sure that sulphuric acid does not remain any perceptible time as a gas when it comes into the open air. Muriatic acid will go several miles; and sulphurous acid, he believes, goes further, but is diluted more rapidly, and therefore, is less perceived. Chlorine will go four miles and be quite distinct to the smell, if the ground be smooth; but if it be roughened by trees or vegetation, the trees obstruct the motion of the air and gases, and the absorbable portion is removed, but not without damage to vegetation. Dr. Smith reports that chemical works generally are greatly on the increase, and the power to repress escapes of gas does not increase with them. He thinks that when new manufactories are proposed the air might be examined, and if the atmosphere be injured to a certain extent, no more of the same manufactories should be allowed at the same place.—*Phila. Med. & Surg. Reporter.*

ANALYSIS OF JUNIPER BERRIES.—E. Donath gives the following (*Ding. Polyt. Journ.*, ccviii., 300) as the result of an investigation of the constituents of the berries of *Juniperus communis*:—

Water	29.44
Essential Oil (obtained by distilling the berries with steam)	0·91
Formic Acid	1·86
Acetic Acid	0·94
Malic Acid (combined with a base)	0·21
Fat resembling wax	0·64
Green Resin	8·46
Hard Brown Resin	1·29
Juniperin (found not to contain nitrogen)	0·37
Pectin (extracted from dried berries by water, and precipitated with alcohol)	0·73
Protein Substances	4·45
Sugar	29·65
Cellulose	15·83
Mineral Constituents	2·33

The wax was extracted with ether, and purified by successive treatments with water and boiling alcohol. From this alcohol, after the wax had deposited, was obtained, upon evaporation, the "green" resin, which had acid properties and resembled fir resin. The "brown" resin was obtained from the berries after being treated with ether by means of alcohol and was soluble in alkalies.—*Ibid.*

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Practical Formulæ

Quinine Pill Mass.—M. Berquier of Provins publishes (*Rèpertoire de Pharmacie*, N.S., i. 630) the following formula for a quinine pill mass :—

Sulphate of Quinine.	30 grams.
Pulverized Gum	5 „
Pure Glycerine	10 „

Suspend the gum in the glycerine, then incorporate the sulphate of quinine, rubbing the ingredients well together in a mortar. A white mass of good pilular consistence is thus produced, which may be divided and rolled as wanted. The mass should weigh exactly 45 grams, or one-and-a-half times the weight of the sulphate of quinine employed, so that it is easy to calculate any desired quantity. Thebaic extract, or any other substance, may be readily introduced. Pills prepared thus are small, and do not harden so as to become more or less insoluble in the stomach. The mass may be kept indefinitely, and if at length it should lose a little of its malleability, a few strokes of the pestle will soften it without any addition.—*Phar. Jour. & Trans.*

Bottle Wax.—Take 400 grams plaster of Paris, 600 grams white English cement, 300 grams chalk, 200 grams dextrine, 5 litres alcohol varnish, and a sufficient quantity of ochre or other coloring material to produce the color desired. The necks of the bottles are dipped into this mixture and allowed to dry.

New process for Tar Water.—L. Pommier prepares a concentrated tar water by macerating in a covered vessel for eight days a mixture consisting of ten parts each of Norwegian tar and ammonia water, and of one hundred parts of water; the mixture is then boiled to expel the excess of ammonia, then cooled and filtered. Thus prepared, it has a mild alkaline reaction to litmus, and may be diluted as required.—*L' Union Pharm, in Am. Jour. Pharm.*

Registrar's Notices.

NEW REGISTRATIONS.—John Barbour, St. Marys; T. C. B. Fraser, Napanee; P. Moulton, Port Hope.

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Drugs, Medicines, &c.	$ c.	$ c.
Acid, Acetic, fort.	0 14 @	0 15
Benzoic, pure	0 23	0 30
Citric	1 40	1 50
Muriatic	0 05	0 06
Nitric	0 11½	0 15
Oxalic	0 22	0 26
Sulphuric	0 03½	0 07
Tartaric, pulv.	0 50	0 50
Ammon, carb. casks	0 23	0 24
" jars	0 23	0 24
Liquor, 880	0 25	0 28
Muriate	0 14	0 15
Nitrate	0 45	0 60
Æther, Acetic	0 45	0 50
Nitrous	0 35	0 37
Sulphuric	0 50	0 50
Antim. Crude, pulv.	0 15	0 17
Tart "	0 55	0 65
Alcohol, 95 per ct.....Cash	1 60	1 72
Arrowroot, Jamaica	0 18	0 22
Bermuda	0 50	0 65
Alum	0 02½	0 03½
Balsam, Canada	0 50	0 50
Copaiba	0 95	1 00
Peru	3 75	4 00
Tolu	0 90	1 00
Bark, Bayberry, pulv.	0 20	0 22
Canella	0 17	0 20
Peruvian, yel. pulv.	0 42	0 50
" red "	2 10	2 20
Slippery Elm, g. b.	0 15	0 20
" flour, packets	0 28	0 32
Sassafras	0 15	0 20
Berries, Cubebs, ground	0 20	0 25
Juniper	0 06	0 10
Beans, Tonquin	0 62	1 10
Vanilla	30 00	30 00
Bismuth, Alb	3 40	4 00
Carb.	3 65	4 00
Camphor, Crude	0 38	0 40
Refined	0 45	0 50
Cantharides	2 80	3 00
Powdered	2 85	3 10
Charcoal, Animal	0 04	0 06
Wood, powdered	0 10	0 15
Chiretta	0 20	0 30
Chloroform	1 10	1 65
Cochineal, S. G.	0 75	0 90
Black	1 10	1 20
Colocynth, pulv.	0 50	0 60
Collodion	0 90	1 00
Elaterium.....oz	3 20	4 00
Ergot	0 35	0 45
Extract Belladonna	1 50	1 60
Colocynth, Co	1 25	1 75
Gentian	0 50	0 60
Hemlock, Ang	0 85	0 95
Henbane, "	1 50	1 60
Jalap	5 00	5 50
Mandrake	1 75	2 00
Nux Vomic.....oz	0 40	0 50
Opium.....oz	1 50	
Rhubarb	5 00	5 50
Sarsap. Hon. Co	1 00	1 20
" Jam. Co	3 50	4 00
Taraxacum, Ang	0 70	0 80
Flowers, Arnica	0 17	0 25
Chamomile	0 32	0 40
Gum, Aloes, Barb. extra	0 70	0 80
" " good	0 40	0 50
" Cape	0 16	0 20
" " powdered	0 20	0 30
Socot	0 50	1 35
" " pulv	1 00	0 00
Arabic, White	0 70	0 75
" powdered	0 60	0 75
" sorts	0 24	0 30
" " powdered	0 42	0 50
" com. Gedda	0 13	0 16
Assafœtida	0 40	0 42
British or Dextrine	0 13	0 15
Benzoin	0 35	0 75
Catechu	0 12	0 15
" powdered	0 25	0 30
Euphorb, pulv.	0 35	0 40
Gamboge	1 40	1 50
Guaiacum	0 90	1 00
Myrrh	0 50	0 70

Drugs, Medicines, &c.—*Contd.*	$ c.	$ c.
Sang Dracon	0 60	0 70
Scammony, powdered	6 00	6 50
" Virg. "	14 50	—
Shellac, Orange	0 65	0 70
Gum, Shellac, liver	0 60	0 65
Storax	0 40	0 45
Tragacanth, flake	1 10	1 40
" common	0 53	0 65
Galls	0 28	0 32
Gelatine, Cox's 6d.	1 15	1 20
Glycerine, common	0 25	0 30
Vienna	0 25	0 30
Prices	0 60	0 75
Honey, Canada, best.	0 15	0 17
Lower Canada	0 14	0 16
Iron, Carb. Precip.	0 20	0 25
" Sacchar.	0 40	0 55
Citrate Ammon.	1 65	1 70
" & Quinine, oz.	0 55	0 58
" & Strychine	0 20	0 25
Sulphate, pure	0 08	0 10
Iodine, good	6 75	7 00
Resublimed	7 50	8 00
Jalapin	1 25	1 50
Kreosote	2 40	2 50
Leaves, Buchu	0 22	0. 30
Foxglove	0 25	0 30
Henbane	0 35	0 40
Senna, Alex	0 27	0 60
" E. I.	0 14	0 20
" Tinnevilly	0 20	0 30
Uva Ursi	0 15	0 17
Lime, Carbolate.....brl	5 50	—
Chloride	0 06	0 07
Sulphate	0 08	0 12
Lead, Acetate	0 15	0 16½
Leptandrin.....oz.	0 60	—
Liq. Bismuth	0 50	0 75
Lye, Concentrated	1 75	2 00
Liquorice, Solazzi	0 50	0 55
Cassano	0 23	0 40
Other brands	0 14	0 25
Liquorice, Refined	0 35	0 45
Magnesia, Carb. 1 oz.	0 20	0 25
" 4 oz.	0 17	0 20
Calcined	0 65	0 75
Citrate.....gran.	0 63	0 75
Mercury	1 70	1 75
Bichlor	1 65	1 75
Chloride	1 80	1 90
C. Chalk	0 75	80
Nit. Oxyd	1 90	2 00
Morphia Acet	4 45	4 60
Mur.	4 45	4 60
Sulph.	4 60	4 75
Musk, pure grain.....oz	25 00	—
Canton	0 90	1 20
Oil, Amonds, sweet	0 40	0 45
" bitter	14 00	15 00
Aniseed	4 00	4 25
Bergamot, super	6 25	6 50
Caraway	3 20	3 50
Cassia	2 50	2 60
Castor, E. I	0 14	0 15
Crystal	0 22	0 25
Italian	0 26	0 28
Citronella	1 25	1 35
Cloves, Ang.	2 75	3 00
Cod Liver	1 25	1 50
Croton	1 75	2 00
Juniper Wood	0 80	1 00
Berries	6 00	7 00
Lavand, Ang.....oz.	0 90	1 00
Exotic	1 40	1 60
Lemon, super	5 00	5 50
ord.	3 20	3 40
Orange	4 00	4 25
Origanum	0 65	0 75
Peppermint Ang.	13 00	14 40
" Amer.	3 80	4 00
Rose, Virgin	8 50	8 75
" good	6 80	7 00
Sassafras	0 90	1 00
Wintergreen	6 00	6 50
Wormwood, pure	4 00	6 50
Ointment, blue	1 30	1 40
Opium, Turkey	8 50	8 75
pulv.	10 50	10 75

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DRUGS, MEDICINES, &c.—*Cont'd*	$ c.	$ c
Orange Peel, opt.	0 30	0 36
" good	0 12½	0 20
Pill, Blue, Mass	1 30	1 40
Potash, Bi.chrom	0 23	0 27
Bi-tart	0 33	0 35
Carbonate	0 14	0 20
Chlorate	0 55	0 60
Nitrate	10 50	11 00
Potassium, Bromide	1 10	1 25
Cyanide	0 75	0 80
Iodide	6 75	7 00
Sulphuret	0 25	0 35
Pepsin, Boudault's...oz	1 40	—
Houghton's..... doz.	8 00	9 00
Morson's.....oz.	0 85	1 10
Phosphorus	0 95	1 00
Podophyllin	0 50	0 60
Quinine, Pelletier's	—	2 45
Howard's	2 70	—
" 100 oz. case.	2 70	—
" 25 oz. tin..	2 65	—
Root, Colombo	0 13	0 20
Curcuma, grd	0 12½	0 17
Dandelion	0 17	0 20
Elecampane	0 16	0 17
Gentian	0 08	0 10
" pulv	0 15	0 20
Hellebore, pulv	0 17	0 20
Ipecac, "	1 50	1 60
Jalap, Vera Cruz	90	1 15
" Tampico	0 70	1 00
Liquorice, select	0 12	0 13
" powdered	0 15	0 20
Mandrake "	0 20	0 25
Orris, "	0 20	0 25
Rhubarb, Turkey	2 50	2 75
" E. I	1 10	1 20
" " pulv	1 20	1 30
" " 2nd	0 90	1 00
" French	0 75	—
Sarsap., Hond	0 40	0 45
" Jam	0 88	0 90
Squills	0 10	0 15½
Senega	1 10	1 .0
Spigelia	0 25	0 30
Sal., Epsom	2 25	3 00
Rochelle	0 32	0 35
Soda	0 02½	0 03
Seed, Anise	0 13	0 16
Canary	0 05	0 06
Cardamon	2 25	2 50
Fe ugreek, g'd	0 09	0 10
Hemp	0 06½	—
Mustard, white	0 14	0 16
Saffron, American	1 00	1 10
Spanish	12 00	13 00
Santonine	7 50	8 00
Sago	0 08	0 09
Silver, Nitrate.....Cash	14 85	16 50
Soap Castile, mottled	0 11	0 14
Soda Ash	0 04	0 05
Bicarb. Newcastle	—	6 5)
" Howard's	0 14	0 16
Caustic.	0 06½	0 06½
Spirits Ammon., arom	0 35	0 35
Strychnine, Crystals	2 60	2 70
Sulphur. Precip	0 10	0 12½
Sublimed	0 03½	0 05
Roll	0 03	0 04½
Vinegar, Wine, pure	0 55	0 60
Verdigris	0 35	0 40
Wax, White, pure	0 75	0 80
Zinc. Chloride.....oz	0 10	0 15
Sulphate, pure	0 10	0 15
" common	0 06	0 10
DYESTUFFS.		
Annatto	0 35 @	0 60
Aniline, Magenta, cryst	2 50	2 80
liquid	2 00	—
Argols, ground	0 15	0 25
Blue Vitrol, pure	0 10	0 10
Camwood	0 06	0 09
Copperas, Green	0 01½	0 02½
Cudbear	0 16	0 25
Fustic, Cuban	0 02½	0 04
Indigo, Bengal	2 40	2 50
Madras	0 0	0 95
Extract	0 30	0 35

DYESTUFFS—*Continued.*		
Japonica	0 07½	0 08
Lacdye, powdered	0 33	0 38
Logwood	0 02	0 03
Logwood, Camp	0 02	0 3½
Extract	0 10	0 14
" 1 lb. bxs	0 13	—
" ½ lb. "	0 14	—
Madder, best Dutch	0 13	0 15
2nd quality	0 12	0 14
Quercitron	0 03	0 05
Sumac	0 06	0 08
Tin, Muriate	0 10½	0 12½
Redwood	0 05	0 06
SPICES.		
Allspice	0 11½ @	0 12
Cassia	0 39	0 40
Cloves	0 40	0 42
Cayenne	0 30	0 35
Ginger, E. I	0 19	0 20
Jam	0 20	0 30
Mace	1 65	1 75
Mustard, com	0 20	0 25
Nutmegs	1 15	1 20
Pepper, Black	0 22½	0 23
White	0 48	0 50
PAINTS, DRY.		
Black, Lamp, com	0 07 @	0 08
" refined	0 25	0 30
Blue, Celestial	0 08	0 12
Prussian	0 65	0 75
Brown, Vandyke	0 10	0 12½
Chalk, White	0 01	0 01½
Green, Brunswick	0 07	0 10
Chrome	0 16	0 25
Paris	0 30	0 35
Magnesia	0 20	0 25
Litharge	0 07	0 09
Pink, Rose	0 12½	0 15
Red Lead	0 07½	0 08
Venetian	0 02½	0 03½
Sienna, B. & G	0 07	0 08
Umber	0 07	0 10
Vermillion, English	1 75	1 80
American	0 25	0 35
Whiting	0 85	0 90
White Lead, dry, gen	0 08½	0 09
" " No. 1	0 07	0 08
" " No. 2	0 05	0 07
Yellow Chrome	0 12½	0 35
" Ochre	0 02½	0 03½
Zinc White, Star	0 10	0 12
COLORS, IN OIL.		
Blue Paint	0 12 @	0 15
Fire Proof Paint	0 06	0 08
Green, Paris	0 30	0 37½
Red, Venetian	0 07	0 10
Patent Dryers, 1 lb tins	0 11	0 12
Putty	0 03¾	0 04½
Yellow Ochre	0 08	0 12
White Lead, gen. 25 lb. tins	2 50	—
" No. 1	2 25	—
" No, 2	2 00	—
" No. 3	1 75	—
" com	1 30	—
White Zinc, Snow	2 75	3 25
NAVAL STORES.		
Black Pitch	5 00 @	5 25
Rosin, Strained	4 50	—
Clear, pale	7 80	—
Spirits Turpentine	0 58	0 60
Tar Wood	5 50	5 75
OILS.		
Cod	0 6 @	0 70
Lard, extra	0 85	0 90
No. 1	0 75	0 80
No. 2	0 75	0 90
Linseed, Raw	0 75	0 80
Boiled	0 80	0 85
Olive, Common	1 10	1 20
Salad	1 80	2 30
" Pints, cases	4 20	4 40
" Quarts	3 25	3 50
Seal Oil, Pale	0 68	0 70
Straw	0 68	0 70
Sesame Salad	1 30	1 35
Sperm, genuine	2 20	2 40
Whale refined	0 90	0 95

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CANADIAN

PHARMACEUTICAL JOURNAL

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Original and Selected Papers.

AMMONIO-CITRATE OF IRON.*

BY CHARLES UMNEY.

The variation in appearance of ammonio-citrate of iron, as met with in trade, must have been noticed by every observant pharmacist.

Since the time of its introduction into medicine by Beral, now about thirty years since, most manufacturers have adopted, notwithstanding the various officinal formulæ that have been published, one or other of the following methods for its production:

(*a*) By dissolving metallic iron (nails) in a solution of citric acid by the aid of heat to the complete saturation of the acid.

(*b*) By adding hydrated ferric oxide to citric acid dissolved in about twice its weight of water, assisting its solution by the heat of a water-bath until the oxide is no longer dissolved, and is visibly in excess.

Solution of ammonia in both cases being added after filtration, to produce the double salt. By either method the result is very similar, the amount of anhydrous ferric oxide resulting from a calcination of the salt with free exposure to air from 30 to 31 per cent., and the appearance of the scaled product nearly or quite identical.

* Pharm. Journ. & Trans., Dec., 1873.

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A review of the various formulæ that have been published in the London and British Pharmacopœias will serve not only to show the relative amounts of ferric oxide directed to be added to the citric acid, but also to indicate (when the examination of commercial specimens is brought forward) that obsolete processes are followed by manufacturers.

As this iron salt is almost universally used it will be interesting at the same time to note the formulæ of the French Codex and the United States' and German Pharmacopœias.

London Pharmacopœia, 1851. (*First officinal.*)

Sulphate of Iron	12 ozs. Troy.
Carbonate of Soda	12½ ozs.
Citric Acid	6 ozs.
Solution Ammonia (·960)	9 fl. ozs.

British Pharmacopœia, 1864.

Solution of Persulphate of Iron (1·441)	8 fl. ozs.
Citric Acid	5 ozs. (Avoir.)
Sol. Ammonia (·960)	14 fl. ozs.

British Pharmacopœia, 1867.

Solution of Persulphate of Iron (1·441)	8 fl. ozs.
Citric Acid	4 ozs. (Avoir.)
Sol. Ammonia (·959)	19½ fl. ozs.

United States' Pharmacopœia, 1873.

Citric Acid	5 oz. 360 grs. (Troy).
Sol. Persulphate of Iron (1·320)	16 fl. ozs.
Sol. Ammonia (·960)	20 fl. ozs.

French Codex, 1866.

Acid Citric	100 parts.
Hydrated Peroxide of Iron	q. s.
Sol. Ammonia	18 parts.

Add such a quantity of hydrated ferric oxide as will correspond to .53 parts of anhydrous oxide iron.

Pharmacopœia Germanica, 1872.

Citric Acid	2 parts.
Oxide of Iron	q. s.
Then add Citric Acid	1 part.
Sol. Ammonia	q. s. to saturation.

The following table, deduced from these formulæ, will show at a glance the relative amounts of anhydrous ferric oxide to the same amount of citric acid :

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	Citric Acid.	Ferric Oxide.	
London Pharm, 1851...	100 parts.	57·3	Added as ferrous salt.
British Pharm, 1864...	"	33·4	Added as ferric salt.
" " 1871...	"	41·8	"
U. S. " 1873...	"	40·0	"
French Codex.	"	53·0	"
Pharm. Germ., 1872...	"	?	"

The London and British Pharmacopœias describe the amount of ferric oxide resulting from incineration with free exposure to air, but the Codex and German and American Pharmacopœias do not state the amount of ferric oxide perfect specimens of their respective salts should contain.

Pharm. Lond.,	1851.....	34 per cent.	Fe_2O_3
Brit. Pharm.,	1864.....	26·5	"
" "	1867.....	27·0	"
U. S.	1873.....	?	"
French Codex.....		?	"
Pharm. German.,	1872.....	?	"

Most of the recent formulæ have one feature in common, viz., the complete saturation of the acid by the oxide of iron, but the quantities ordered by each work with this object in view are very disproportionate.

The British Pharmacopœia, 1867, says, "*dissolve the citric acid in eight ounces of distilled water, and having applied the heat of a water-bath, add the oxide of iron, and stir them together until the whole, or nearly the whole, of the oxide has dissolved.*"

It is presumed that complete saturation is intended by the expression "*until nearly the whole of the oxide has dissolved,*" and that the amount of oxide produced by the precipitation of the persulphate of iron ordered is in slight excess of the quantity required for such saturation.

Be this as it may, upon referring to the Codex we find an amount of hydrated oxide ordered which shall be equal to 53 parts of anhydrous oxide, whereas the British Pharmacopœia, 1867, orders an equivalent of 42 parts only.

Practically I have found that the French Codex formula is much more like the basis of ammonio-citrate of iron of the best makers than is the British Pharm. formula, although fifty parts (half its weight) would more accurately represent the amount of ferric oxide

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(added as hydrated oxide) required to saturate 100 parts of citric acid than would *fifty-three* parts, as named by the Codex.

A comparison of the formulæ of the British Pharmacopœias of 1864 and 1867, as to the amount of ferric oxide added to the acid, and the amount stated to be left by calcination is most conflicting; for instance, the 1864 Pharmacopœia shows that for 33·4 parts ferric oxide to 100 citric acid, as much as 26·5 per cent. is left upon calcination, whereas that of 1867 indicates that from 41·8 parts added to the same amount of citric acid, 27 per cent. is left by calcination.

The mean of the three analyses of ammonio-citrate of iron (B.P. 1867) gave ferric oxide by calcination 27·4 per cent., proving the accuracy of the present officinal test and the fallacy of the 1864 Pharmacopœia.

Of course it may so happen that the British Pharmacopœia does not intend that the acid shall be saturated with oxide, and has merely framed its formula with other objects in view.

If it were so contemplated I think a great improvement in the formulæ would have been made if a salt had been recognized that would have scaled easily, and represented the best specimens as met with in trade.

An examination of the ammonio-citrate of the leading London manufacturers indicate that at the present time uniformity is the exception rather than the rule; that the British Pharmacopœia scales are not to be met with; that the preparation of the London Pharmacopœia, or a modification of it is still used; and that the *complete saturation* process is in some cases followed.

London Pharmacopœia, 1851		34·0 (determined).
British Pharmacopœia, 1867		27·4 "
Manufacturing Process (saturation).		30·7 "
Trade Specimens	(1.)	26·0
"	(2.)	24·1
"	(3.)	30·1
"	(4.)	30·0
"	(5.)	33·4
"	(6.)	33·3
"	(7.)	29.4

As uniformity in all substances used in medicine is of vital importance I would suggest that at the earliest convenient date the use of ferric oxide sufficient to complete the saturation of the acid by the aid of a water-bath heat be recognized, and that the formula of the British Pharmacopœia be amended by substituting *nine and a half fluid ounces* of the persulphate of iron solution for the present quantity of eight fluid ounces, or as much hydrated ferric oxide to one hundred parts of citric acid as shall be equivalent to fifty parts (49·6) of anhydrous ferric oxide.

Laboratory, 40 Aldersgate Street, E.C.

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PHOSPHATE OF IRON AND ITS COMBINATIONS.*

BY CHARLES GEISSE POLK, M.D., OF PHILADELPHIA.

(Continued from page 251.)

SYRUP OF PHOSPHATE OF IRON AND AMMONIA.

Heat phosphate of soda to redness. Take of the pyrophosphate of soda so obtained ʒ ij. Dissolve in one pint of water. Take of the sulphate of iron ʒ iv. Dissolve in twelve ounces of water. Mix the solutions, collect, wash, and dry the precipitate at a gentle heat over a water-bath. Take of this precipitate ʒ i., liq. ammonia ʒ iss., water q. s. Dilute the ammonia water with an equal volume of distilled water, and rub it with the phosphate of iron in a mortar until the latter is dissolved. Then dilute to seven ounces, and preserve gentle heat until it is evaporated to six ounces, and add ten ounces of dense syrup. Each drachm contains four grains of the phosphate of iron with ammonium. The syrup is quite permanent and remarkably free from inky taste. It is, no doubt, a very good preparation. The only specimen I have ever seen of it was made by Dr. A. D. Hauverman, now practising at Chattanooga, Tenn., but not being at all partial to bibasic phosphates I have never used it. My partiality is, however, very strong for the following preparation :—

SYRUPUS FERRI ET AMMONII CUM QUINIÆ ET STRYCHNIÆ PHOSPHATI.

R.	Ferri sulphatis granulati	ʒ vi.
	Sodii phosphatis	ʒ x.
	Acidi phosphorici anhyd	ʒ xij.
	Acidi nitrici c. p.....	ʒ iij.
	Quinia sulphatis	ʒ i.
	Acidi sulphurici dil.....	q. s.
	Aquæ ammoniæ concent	q. s.
	Strychniæ citratis	grs. xiijss.
	Sacchari albi	ʒ xxx.
	Aquæ destillatæ, q. s.....	ʒ xlviij.

Prepare the anhydrous phosphoric acid by igniting phosphorus in dry oxygen. A soon as the combustion is completed dissolve twelve ounces of the white anhydrous phosphoric acid in sixteen

*Philadelphhia Medical Reporter, in Am. Drug. Circ.

NOTE.—Dr. Polk notices an error in the formula for Sprup of Phosphate of Iron, Quinia and Strychina, published in last number. This error did not originate with this journal, but occurred in the publication in which the paper first appeared. For "Syrupy Phosphoric Acid, f. oz. iv." read *two* fluid ounces, or half the quantity ordered.—ED. CAN. PHARM. JOUR.

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ounces of distilled water; add the nitric acid, place on a sand-bath and apply heat until the fumes of nitric acid cease to be evolved. Dissolve the sulphate of iron in ʒ x of boiling water, and the phosphate of sodium in twenty ounces of boiling water. Mix the solutions and carefully wash the magma until the washings are tasteless. Dissolve the quinia and the strychnia in four ounces of water, and precipitate the alkaloids by slowly adding a weak solution of ammonia water, and carefully wash them. Add the phosphate of iron to six ounces of the solution of phosphoric acid, and apply gentle heat until dissolved. Dissolve the quinia and strychnia in four ounces of the solution of phosphoric acid. Saturate the remaining solution of the phosphoric acid with the concentrated ammonia water. Lastly, add the solutions of the phosphate of iron, the alkaloids and the phosphate of ammonium together in a bottle of the capacity of three pints, introduce sugar and sufficient water to complete the measures of forty-eight ounces.

The same result can be obtained by using twelve ounces of syrupy phosphoric acid. The iron, quinia, and strychnia being dissolved in six ounces of the syrupy phosphoric acid and the remaining six ounces saturated with the concentrated ammonia water, mix them, and then add the sugar and water as above directed. The only objection that can be urged against this preparation is the very large amount of phosphoric acid, but when we consider that it is nearly all in basic combination, the objection is less than it first appears. I regard this ammoniated syrup of the phosphates as a very valuable addition to our list of remedial agents.

Each drachm contains five grains of the phosphate of iron, six grains of the phosphate of ammonium, and one-fourth grain of the phosphate of quinia, and one twenty-eighth of a grain of the phosphate of strychnia. If therapeutically inferior to the syrup of the phosphates of iron, quinia, and strychnia, as a tonic, the phosphate of ammonia adapts it to an especial range of diseases. The permanency of the syrup also entitles it to important consideration. This formula differs very much from one previously published, and seems to be a better one.

PHOSPHATE OF IRON WITH AMMONIO-CITRATE.

The phosphate of iron with ammonio-citrate is a very valuable preparation, and possesses several advantages over the bibasic phosphate with ammonio-citrate. The profession is indebted to Mr. Creuse, of the *Physician and Pharmacist*, for the proper method of preparing it in scales (see the *Physician and Pharmacist*, November, 1867,) and to Mr. R. Rother for the syrup form. For several years past I have been accustomed to prepare a syrup of this form of iron thus, however using the potassic-citrate instead of the ammonic-citrate:

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SYRUP PHOSPHATE OF IRON WITH POTASSIC CITRATE.

R. Liq. ferri tersulphatis..... ℥ viij.
Sodii phosph ..... ℥ ix.
Acidi citrici ..... ℥ xiv.
Potassii bicarb..... q. s.
Sacchar. alb..... ℥ xiv.
Aquæ..... q. s.

Dissolve the phosphate of sodium in one pint of boiling water, and slowly add to the solution the tersulphate of iron, stirring slowly until the phosphate of iron is completely precipitated. Then wash it in a funnel, on a muslin filter, until the washings are tasteless. Saturate the citric acid dissolved in one ounce of boiling water with the bicarbonate of potassium, add to the iron and apply gentle heat on a sand-bath until the iron phosphate is dissolved. If it is not dissolved readily a small amount of citric acid may be added, which very promptly secures a perfect solution. Evaporate to ten ounces, add the sugar, and continue a gentle heat until the sugar is dissolved. Each drachm represents fifteen grains of the citro-potassic ferro-phosphate.

This syrup can be very readily used as the ferric base of an elixir with quinia, cinchona, or gentian. Or the sugar may be omitted and the process of scaled ferric salts followed, by which very perfect olive green scales may be obtained. It will be observed that the process is almost precisely like that followed for the pyrophosphate of iron, only the tribasic phosphate of soda is used instead of the bibasic phosphate.

SYRUP OF THE SUPERPHOSPATE OF IRON.

Dissolve four ounces of glacial phosphoric acid in six ounces of water, raise the temperature to the boiling point, and add sufficient freshly precipitated phosphate of iron to saturate the solution, then introduce sufficient syrup to make thirty-two fluid ounces. If it be desired to unite quinia alone, or with strychnia, add the freshly precipitated alkaloids in the proportion of one grain of quinia and one-twenty-eighth of strychnia to each drachm, or two hundred and fifty-six grains of the former and eight grains of the latter to an ounce of water, and rub them up with nine drachms of syrupy phosphoric acid. Add sufficient syrup to the iron to form sixteen ounces, and sufficient syrup to the alkaloids to measure sixteen ounces, and add the two syrups together. This forms a powerful tonic, seldom disagrees with the stomach, is entirely void of the slightest inky taste, and proves a very effective preparation. Unfortunately, it is very unstable and deteriorates rapidly. This fault can be remedied by adding two ounces, instead of nine drachms of syrupy phosphoric acid, but then it will have the faults of the concentrated ferrous syrups without their tonic power, in relative doses.

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In conclusion, I may here remark that the syrup of the hypophosphite of iron, quinia and strychnia exceeds in its therapeutical value every other preparation here given. Pharmaceutically, however, it is not perfect, and I would be very thankful for an economical and practical mode of preparing it. To me this preparation is yet an unsettled problem.

The syrup is also so expensive as to be an obstacle in its general use.

The syrup of the phosphates of iron, quinia, and strychnia prepared by my formula is an article of great value, and will seldom disappoint those who trust it as a general tonic.

The phosphate of iron with ammonium-citrate is a mild chalybeate, very soluble, readily incorporated into compounds, either as elixirs, syrups, or pills, and thus fills a very important desideratum. It is therapeutically and pharmaceutically superior to the bibasic phosphate, which it is destined to supersede in many preparations where the latter is now employed. I do not believe bibasic phosphoric acid possesses any remedial powers. The phosphate of iron with ammonium phosphate is worthy of further investigation. The more I have used it the more I have been impressed with its great importance, the wider its range of application, and greater my confidence in its remedial power. In chronic engorgement of the uterus, attended with aching pain in the left iliac region, with tenderness on pressure, morbid sensibility along the course of the spine, deranged digestion, attended with constipation, headache, nervous derangement of the heart, attended with marked anæmia, I have found this combination to give better results than anything else in the manner of constitutional treatment. In fact, in nearly every case unattended with ulceration or organic disease this syrup, assisted by enemas of cold water (one pint being injected into the bowels upon arising from the bed every morning), and an occasional blister over the region of the uterus, gave very prompt relief and produced a radical cure.

In certain forms of neuralgia it seems to exceed in its prompt and permanent relief every other known remedy. A few months ago I was consulted by a lady who had been for two years a victim of sciatica. Aconite, belladonna, bromide of potassium, iodide of potassium, colchicum, blisters, moxas, arsenic, morphia, quinia, and iron (the sub-carbonate) had been freely used without any permanent benefit. I prescribed for her this preparation, to be taken in teaspoonful doses three times a day, however increasing the amount of quinia to two grains in each dose, twenty grains of hydrate of chloral, twenty grains of the bromide of potassium, and one drachm of the valerianate of ammonium, to be taken in a wineglassful of port wine at bedtime, and a liniment composed of equal parts of saturated tincture of aconite (18 ozs. to the pint), chloroform, and sufficient camphor to saturate them. Within a week the

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suffering was much mitigated, and in six weeks after the cure seemed perfect.

In neuralgia of the face and head, the result has been extremely gratifying. Cases that had defied every other treatment often obtained relief from this syrup. About four months ago a gentleman about fifty years of age placed himself under my treatment. He was suffering intensely with neuralgia on the left side of the head, his eyesight very much impaired, and his intellectual faculties reduced almost to the condition of a puling babe. I placed him on this preparation. The improvement was remarkable. In one week the acute pain had subsided to a slight soreness, the eyesight was very much improved, the change in his physiognomy was very marked, the pale, haggard, woe-begone expression, so marked on his countenance at the beginning of my treatment, was replaced by a bright, cheerful face. He used twelve ounces of the preparation, and then, not being able to procure it, was persuaded to use Easton's syrup—that it was just as good. It seemed for a couple of weeks to do a slight benefit. The physician then placed him on bromide of potassium, and all the good he had received from the iron treatment was speedily undone.

In those cases of subacute rheumatism associated with anæmia, nervous debility, and slight cardiac trouble, in fact, the very numerous class of rheumatics found in low, damp, malarial situations, I esteem the syrup of the phosphates of iron and ammonia, with quinia and strychnia, very highly. I, however, use it in alternation with the following :—

R. Tinc. guiac. amm..... ʒ ij.
Fluid ext. colchici rad..... ʒ ss.
Potassii iodidi..... ʒ iss.
Fluid ext. cardamomi..... ʒ iij.
Syrupus aurant. cort..... ʒ iij.
Aquæ q. s..... ℥ viij.

Tablespoonful every four or six hours.

This treatment has been generally very satisfactory in my hands, and holds my confidence in a higher degree than any other.

Although one might, *a priori*, infer that the main good resulted in such cases from the last recipe, I do not think so. The phosphate of ammonia is one of the most valuable remedies in rheumatism. Quinia is well known as an anti-rheumatic, especially in the class of cases above referred to. In diseases of the urinary and genito-urinary organs, this combination does much good. While a medical officer in the Federal army, I had very rare chances of using this remedy, and watching the effect, as it only can be watched in an army hospital, during the late civil war; and, taking my own experience as a datum, I am very positive in my conclusion that it often did more good than I obtained from other

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remedies. In chronic diarrhœa, complicated as it very often was with Bright's kidney disease, this preparation often stayed the progress of this very obstinate malady, although I am sure not a single cure was permanent, except those sent to Northern hospitals, in which cases the removal from concurring and exciting causes did more advantage than could have possibly accrued from the entire paraphernalia of the materia medica.

In imperfectly cured pneumonia, where there has been extensive extravasation into the parenchyma of the lungs, the air-cells obstructed by the albuminous exudation, and a low state of inflammation still continuing, this preparation has given very good results, especially by adding about twenty grains of phosphate of ammonium to each dose. Such cases are generally diagnosed phthisis, dosed with cod-liver oil, and buried. A correct diagnosis and judicious treatment will cure nearly all of them. Such cases have given eclat to Jayne's Expectorant and other almost as vile nostrums. Although those abominations are usually very prejudicial to such cases, the conservative resources of nature surmount both the poison and the disease. Notwithstanding the poisonous properties of the so-called "Winslow Soothing Syrup" have received pretty extensive condemnation, I regard it as a comparatively harmless remedy alongside of this "Expectorant" of the "Prince of Quacks." The diagnosis between phthisis and chronic pneumonia is too seldom, I fear, definitely determined. The rapid destruction of the lungs after acute pneumonia is too often erroneously attributed to tubercles, and the true pathological lesion overlooked. In such cases the syrup of the phosphate of iron and ammonia, with quinia strychina, is entitled to favourable consideration, and I have no doubt that very many would recover under judicious treatment, who die from the sequelæ of pneumonia. In recommending the syrup of the phosphate of iron and ammonium, with quinia and strychnia, as a very valuable agent in the sequelæ of this disease, I need hardly remind the profession that the presence of inflammatory symptoms contra-indicate the preparation; the iron is very prejudicial to the already irritable air-cells. Phosphate of ammonium and phosphate of sodium seem to have a marked influence. Ten grains each, given in an ounce of camphor-water, and repeated four or five times a day, very often modifies the condition materially, if it does not dissipate every inflammatory symptom. Inflammatory symptoms being removed, the iron combination can be used with marked benefit. Phosphorus certainly exerts a marked influence over pulmonary troubles. I have seen several cases of acute pneumonia treated by phosphorus in 1-200 of a grain doses, and repeated every two or three hours. They did very well. The improvement was marked and rapid, and the cure effectual. I have, however, never ventured to trust a patient of my own to such treatment.

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The hypophosphites are unquestionably the best medium by which phosphorus can be introduced into the system, by which the curative impression can be transmitted. The hypophosphites of iron, ammonium, quinia, and strychnia seem to equal, if not surpass, the phosphates of the same salts in nerve trouble, surpass that combination in pulmonary diseases, but prove very much inferior in rheumatism, gout, uterine and kidney derangements. As a tonic, no combination yet devised, of iron and alkaloids, equals the syrup of the ferrous phosphate, with quinia and strychnia, made according to my formula.

UNOFFICINAL FORMULAS.*

REPORTED BY J. F. HANCOCK.

COMPOUND POWDER OF COCHINEAL.

Take of	Cochineal in powder	120 grains.
	Alum, in powder	120 grains.
	Carbonate of Potassium	120 grains.
	Bitartrate of Potassium	240 grains.

Mix. Keep in well-stoppered vial.

COMPOUND TINCTURE OF COCHINEAL.

Take of	Compound Powder of Cochineal	120 grains.
	Diluted Alcohol	2 fluid ounces.

Slightly warm the diluted alcohol and mix with the powder, macerate in a stoppered vial for twelve hours, and filter for use. This is permanent, and imparts a beautiful red color to elixirs and solutions which have no acid properties.

SPIRIT OF ORANGE.

Take of	Oil of Sweet Orange	1 fluid ounce.
	Stronger Alcohol	15 fluid ounces.

Mix. This is made in proportions to conform with the spirits of the U. S. P., and is a pleasant and convenient form of orange flavor.

SIMPLE ELIXIR.

Take of	Spirits of Orange	½ fluid ounce.
	Stronger Alcohol	4 fluid ounces.
	Cinnamon Water	6 fluid ounces.
	Syrup	6 fluid ounces.

Mix.

This is a turbid mixture. For many purposes it is not neces-

* Report of the Committee appointed by the Am. Pharm. Assoc. to inquire into unofficinal formulas, with a view to the establishment of a uniform standard. (See "Books and Pamphlets).

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sary to filter before using, but generally it should be clear, particularly when used for physicians' prescriptions, and in making some elixirs. Filtering-paper pulp, made by beating scraps of chemically pure filtering-paper in a mortar, in the proportion of sixty grains of paper to half fluid ounce of water, added to sixteen fluid ounces of the elixir, agitated briskly for a few moments, and filtered, renders the elixir perfectly limpid. The paper is free from the chemical objections urged against carbonate of magnesium, chalk, &c., which are frequently used as clarifying agents.

The very pleasant taste and odor of this elixir, its freedom from color and chemical impurities, commends it for general use as a medicating vehicle.

RED ELIXIR.

Take of Comp. Tincture of Cochineal ..... ½ fluid ounce.
Simple Elixir ..... 16 fluid ounces.

Mix.

This is sometimes preferred as a simple elixir because of its beautiful color.

ELIXIR OF CALISAYA BARK.

Take of Tinct. Cinchona, U. S. P., 1870 ..... 22 fluidrachms.
Simple Elixir..... sufficient to make 16 fluid ounces.

Mix and filter. This contains *the virtues* of two grains of Calisaya bark in one fluidrachm.

ELIXIR OF CALISAYA BARK WITH IRON.

Take of Elixir of Calisaya Bark ..... 15 fluid ounces.
Warm Distilled Water ..... 1 fluid ounce.
Citrate of Iron, *soluble* ..... 128 grains.

Dissolve the iron in the warm water and add the elixir. Filter if necessary. Each fluidrachm of the unfiltered elixir contains one grain of the iron salt, and the virtues of nearly two grains of Calisaya bark.

COMPOUND ELIXIR OF CINCHONA.

Take of Compound Tinct. of Cinchona, U.S.P., 1870..... 22 fluidrachms.
Simple Elixir..... sufficient to make 16 fluid ounces.

Mix and filter. If not required for immediate use, this and also the Calisaya elixir should stand for about twelve hours before filtering.

COMPOUND ELIXIR OF CINCHONA WITH IRON.

Take of Compound Elixir of Cinchona..... 15 fluid ounces.
Warm Distilled Water..... 1 fluid ounce.
Citrate of Iron, *soluble* ..... 120 grains.

Mix. Proceed as for Elixir of Calisaya with Iron.

ELIXIR OF CITRATE OF IRON.

Take of Citrate of Iron, *soluble*..... 256 grains.
Warm Distilled Water ..... 1 fluid ounce.
Simple Elixir ..... 15 fluid ounces.

Dissolve the iron in the warm water and mix with the simple elixir. Filter.

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ELIXIR OF PYROPHOSPHATE OF IRON.

Take of Pyrophosphate of Iron	256 grains.
Warm Distilled Water	1 fluid ounce.
Simple Elixir	15 fluid ounces.

Make according to directions for Elixir of Citrate of Iron.

This is the same in medicinal strength as Professor Diehl's formula.

ELIXIR OF CITRATE OF BISMUTH.

Take of Citrate of Bismuth and Ammonium.....	256 grains.
Warm Distilled Water.....	4 fluid ounces.
Water of Ammonia (drop by drop).....	sufficient.
Simple Elixir..... .....sufficient to make	sixteen fluid ounces of finished elixir.

This the same bismuth strength as Professor Diehl's formula, viz., two grains of citrate of bismuth and ammonium in each fluidrachm.

ELIXIR OF PEPSIN.

Take of Saccharated Pepsin, Scheffer's formula	256 grains.
Sherry Wine	14 fluid ounces.
Simple Syrup	2 fluid ounces.
Fluid Extract of Ginger	25 drops.

Dissolve the pepsin in the wine, mix the fluid extract of ginger with the syrup, and mix altogether. Filter if necessary. Contains two grains of pepsin to the fluidrachm.

ELIXIR OF VALERIANATE OF AMMONIUM.

Take of Valerianate of Ammonium in crystals..	256 grains.
Compound Tinct. of Cochineal	½ fluid ounce.
Simple Elixir	15½ fluid ounces.

Dissolve the valerianate of ammonium in two ounces of the simple elixir, and carefully add water of ammonia until the solution is exactly neutral to test-paper. Mix with the balance of simple elixir, and then add the compound tincture of cochineal.

This is the formula of Professor C. Lewis Diehl, with the exception of the simple elixir. Notwithstanding this preparation contains a larger quantity than usual of the valerianate of ammonium (two grains of the salt in each fluidrachm), yet its unpleasant taste and odor is effectually masked by the fragrance of the simple elixir.

ELIXIR OF VALERIANATE OF AMMONIUM WITH QUINIA.

Take of Sulphate of Quinia	128 grains.
Elixir of Valerianate of Ammonium ...	16 fluid ounces.

Mix. Filter if necessary. Sulphate of quinia is soluble in elixir of valerianate of ammonium to twice the quantity here ordered.

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COMPOUND ELIXIR OF SUMBUL.

Take of Tincture of Sumbul (Brit. Ph. 1867) *	4 fluid ounces.
Syrup	4 fluid ounces.
Compound Tincture of Cochineal	½ fluid ounce.
Elixir of Valerianate of Ammonium ...	8 fluid ounces.

Mix.

The elixir is slightly turbid, owing to the resin of the sumbul, which, if filtered out, must lessen its medicinal powers. This is given as a type of *extemporaneous elixirs*, which should not be filtered, but dispensed with the direction, "*Shake the vial before pouring out each dose.*"

* This is made by macerating and displacing two and a half ounces avoirdupois of powdered sumbul with proof spirit, so as to obtain one imperial pint (f℥xix, f℥iss., U. S. measure) of tincture.

(*To be continued*).

FORMULÆ FOR PEPSIN PREPARATIONS.*

BY HENRY BIROTH.

All Formulæ for Elixirs and other preparations containing Pepsin, heretofore published, in the various Pharmaceutical Journals, differ so greatly in regard to doses, as well as the mode of preparing, that the demand for *uniformity* and *simplicity* in these Preparations has become quite necessary. Now for the last two years I have been manufacturing Pepsin, and consequently have paid much attention to the different preparations in which Pepsin is used. The results are the following formulæ, which I submit to the Pharmaceutical Profession. They are based upon the dose of the remedies used therein, and their simplicity is evident. Elixirs, &c. can be prepared according to these formulæ instantly, when prescribed, or kept on hand, in the smallest quantities; they are elegant, palatable, and may be modified by the Physician ad libitum.

The dose for children is from a half to one *tea*spoonful. For adults, from a half to one *table*spoonful.

*Chicago Pharmacist, February, 1874.

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Each teaspoonful contains, in grains,

Pepsin.	Iron.	Bismuth.	Quinine.	Strychnia.
2	1	½	½	1-128

Each tablespoonful contains, in grains,

Pepsin.	Iron.	Bismuth.	Quinine.	Strychnia.
8	4	2	1	1-32

SYRUP OF PEPSIN.

Powdered Pepsin.....256 grains.
Muriatic Acid ..... 1 dram.
Syr. orange flower water 16 ounces.
Mix.

WINE OF PEPSIN.

Powdered Pepsin.....256 grains.
Muriatic Acid ..... 1 dram.
Sherry wine ..... 16 ounces.
Mix.

ELIXIR OF PEPSIN.

Powdered Pepsin.....256 grains.
Muriatic Acid ..... 1 dram.
Orange flower water.... 8 ounces.
Bitter Almond water.... 2 ounces.
Simple Sprup ..... 2 ounces.
Glycerin ..... 2 ounces.
Deodorized Alcohol ... 2 ounces.
Mix.

ELIXIR OF PEPSIN AND IRON.

Elixir of Pepsin ..... 16 ounces.
Citrate of Iron, soluble.128 grains,
Mix.

LIQUID PEPSIN.

Powdered Pepsin.....256 grains.
Muriatic Acid..... 1 dram.
Glycerin..... 6 ounces.
Water..... 10 ounces.
Mix.

ELIXIR PEPSIN, IRON, QUININE BISMUTH AND STRYCHNIA.

Elixir of Pepsin, Iron, Quinine and Bismuth ..... 16 ounces.
Sulphate of Strychnia. 1 grain.
Mix.

AROMATIC LIQUID PEPSIN.

Powdered Pepsin.....256 grains.
Muriatic Acid ..... 1 dram.
Glycerin ..... 6 ounces.
Orange flower water.... 8 ounces.
Bitter Almond water.... 2 ounces.
Mix.

ELIXIR OF PEPSIN AND BISMUTH.

Elixir of Pepsin ..... 16 ounces.
Amm. citrate of bismuth 64 grains.
Mix.

ELIXIR OF PEPSIN AND QUININE.

Elixir of Pepsin..... 16 ounces.
Sulphate of Quinine..... 32 ounces.
Mix.

ELIXIR OF PEPSIN, IRON AND BISMUTH.

Elixir of Pepsin..... 16 ounces.
Citrate of Iron, soluble..128 grains.
Am.-citrate of bismuth 64 grains.
Mix.

ELIXIR PEPSIN IRON AND QUININE.

Elixir of Pepsin..... 16 ounces.
Citrate of Iron, soluble..128 grains.
Sulphate of Quinine..... 32 grains.
Mix.

ELIXIR PEPSIN, IRON, QUININE AND BISMUTH.

Elixir Pepsin..... 16 ounces.
Citrate of Iron, soluble 128 grains.
Ammonio citrate bismuth 64 grains.
Quinæ Sulphate.....32 grains.
Mix.

Remarks.—To obtain a good preparation, Pepsin has to be treated with water, and acid, allowing it to swell and dissolve; then filter, and add the other ingredients, alcohol last. The salts of Iron and Bismuth should be perfectly soluble, otherwise a few grains of carbonate of ammonia are to be added when rubbed together.

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PURIFICATION OF CRAB ORCHARD SALT.*

BY RICHARD V. MATTISON.

Among the purgative medicines used in various sections of this country, none are more rapidly finding favor among physicians and the general public than the salt obtained by evaporating the waters of the springs at Crab Orchard, Lincoln county, Kentucky.

As the salt appears in our market it is of various degrees of color and purity. It is usually prepared by concentrating the water in iron kettles and then allowing the concentrated water to stand at rest until the largest portion of the organic matter is precipitated. The supernatant liquid in then decanted, more or less care being used, and evaporated. The yield is about 1 to 1.25 per cent., ten gallons of the water yielding about a pound of the commercial salt. Much more care was formerly used in the preparation of this salt than now, and of late years the salt has gradually grown more and more impure, owing to the ready sale found for it, which fact was noticed in a letter from the proprietors a short time ago, in which they remarked "that the supply was not equal to the demand."

When dissolved in water the solution of the commercial salt presents a very unsatisfactory appearance, and is certainly very far from being inviting as a medicine. This should be remedied; in fact, Crab Orchard salt should never be dispensed without first being *purified*, which is easily done by the following process (which I think should be performed at the spring, before the salt is ever offered to the market.) Dissolve the salt in boiling water and filter through paper, or, on a large scale, flannel bags are best. The filtrate is then evaporated carefully to dryness, stirring meanwhile to favor granulation and prevent caking. If the directions are carefully followed, the product will be a beautiful snow-white salt, perfectly soluble in water; one which the pharmacist can recommend and dispense with satisfaction; more active than the ordinary salt, as it is free from the insoluble earthy admixtures of alumina, calcium sulphate, etc. The purified salt usually contains much less water than the commercial, which varies very much, the amount ranging from 35 to 50 per cent., the mean being usually about 40 per cent. The active ingredients seem to be principally magnesium and sodium sulphates, also a considerable proportion of potassium sulphate, with sodic and lithic chlorides. A small amount of ferric oxide is left in the filter, but the amount is so small that I think it of little consequence that the purified salt does not contain it.

Large quantities of a spurious salt are prepared by a house on one of the principal streets of Louisville, but with such secresy that stores only a few squares distant sell the salt without a doubt of its

* Read at a meeting of the Philadelphia College of Pharmacy, and published in the Am. Jour. Pharm. Jan. 1874.

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genuineness. It seems to be principally magnesium sulphate, with a small proportion of ferric sulphate.

After considerable experience in purifiying Crab Orchard salt, I may state that the usual amount of organic matter in the salt is from 8 to 12 per cent. From 20 to 35 per cent. of loss is sustained in the purification, the greater portion of the loss being water. This loss need not be met with by pharmacists generally, a partially anhydrous salt being desired by myself for the production of an *active* granular effervescent salt. I would commend to all the advantage of preparing the purified salt themselves, the preparation of a few pounds being a matter of little trouble, and yielding a fair remuneration by the satisfaction accorded and increase of sale.

Philadelphia, 12th mo. 13, 1873.

PREPARATION AND COATING OF IODIDE OF IRON PILLS. *

In an article in the *Journ. de Pharm. et de Chimie*, (vol. xviii., p. 328) M. Magnes Lahens discusses the conditions most favourable for the preparation of iodide of iron pills. Some of the variations from the Codex recommended are already adopted in the B. P. The operation, he thinks, should be conducted at a temperature of 50° to 60° C. (122° to 140° F.) slight excess of iron should be present, and an iron dish should be used in preference to glass or porcelain vessels. His formula is as follows:—

Pure iodine.	4·10 grams.
Powdered iron	1·90 "
Powdered sugar	2·50 "
Powdered gum arabic . . .	2·50 "
Distilled water	2·50 "

Put the water and the powdered iron into an iron dish, add the iodine gradually, and assist the reaction by stirring with an iron spatula and gentle heat; when the reaction is complete, add the gum and the sugar, then heat to about 50° C., stirring continually, until the mass ceases to drop when a little is taken up with the end of the spatula. The mass may then be readily converted into pills or dragées.

To obtain the pills, incorporate into the mass 5 grams of powdered liquorice root, and if the consistence require it, heat it for some minutes; divide into one hundred pills, roll them in powdered gum, and, if desired, coat with mastic and tolu.

For sugar-coated pills (dragées), incorporate with the mass 7·50 grams of powdered gum arabic, then heat very slightly to soften

* Pharm. Jour. & Trans.

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it. The hundred pills obtained are rolled in powdered gum arabic, heated, and agitated with a circular motion in a suitable vessel, until of the proper hardness, after which they may be sugar-coated.

Each pill and each dragée contains about 5 centigrams of iodide of iron and one centigram of powdered iron.

The pills contain iodide of iron in a state of perfect purity. Put into cold water some months after their preparation, they will dissolve, save the excess of iron, without colouring it.

The following is the mode of coating proposed by M. Magnes-Lahens: Roll the pills quickly, about fifty at a time, with the hand in a clear mucilage of gum arabic spread thinly in a saucer; when they are completely moistened throw them into a basin containing a mixture of sugar, 9 parts, with gum arabic one part; agitate them until they are covered with a layer of the powder, heat them for about eight or ten minutes, at first very slightly, and afterwards increase the heat, rotating the pills continually. After cooling, coat them a second and then a third time, following the process just described. These pills may thus be prepared in small or large quantities; in the latter case they should be put in the drying closet after each coating. Made with this precaution they will keep a long time in a good condition.

THE DILUTION OF ALCOHOL,*

The following table, showing the proportion of distilled water required to reduce alcohol of certain degrees of strength to those of greater dilution, has been compiled by M. Berquier, and is published in the *Repertoire de Pharmacie* (vol. i., p. 628). Opposite to the figure representing the degree of strength of the alcohol which is to be diluted will be found the proportion of alcohol and water to be used to reduce it to the strength at the top of the respective columns. Thus if it be desired to prepare alcohol of 80° from that of 94°, the figure 94 is sought for under the heading, "Strength of Alcohol employed," then to the right under the head, "Strength required, 80°," will be found the figures 808 and 192, indicating that 808 parts of the said 94° alcohol and 192 parts of distilled water are required to prepare 1000 parts of alcohol of 80°. For the convenience of English pharmacists the specific gravities corresponding to the different percentages of alcohol have been added.

*Phar. Jour. and Trans.

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Table indicating the Proportions by Weight of Alcohol of different Strengths, and of Distilled Water required to produce* 1000 *parts of Alcohol of Lower Strength.

Strength of Alcohol employed.		Strength Required.										Strength of Alcohol employed.	Specific Gravity	Strength Required.			
		90° = sp. g. 8228.		85° = sp. g. 8357.		80° = sp. g. 8183.		60° = sp. g. 8956.		56° = sp. g. 9047.				60° = sp. g. 8956.		56° = sp. g. 9047.	
In degrees corresponding with percentage of Alcohol.	Specific Gravity	Alcohol.	Water.	Alcohol.	Water.	Alcohol.	Water.	Alcohol.	Water.	Alcohol.	Water.			Alcohol.	Water.	Alcohol.	Water.
100°	7938	857	143	795	205	735	265	522	478	482	518	78°	8533	732	268	677	323
99	7969	871	129	807	193	747	253	530	470	490	510	77	8557	744	256	688	312
98	8001	885	115	820	180	759	241	539	461	498	502	76	8581	756	244	699	301
97	8031	899	101	833	167	771	229	547	453	506	494	75	8603	768	232	710	290
96	8061	913	87	846	154	783	217	555	445	514	486	74	8625	781	219	722	278
95	8089	927	73	859	141	796	204	564	436	522	478	73	8649	794	206	734	266
94	8118	942	58	873	127	808	192	573	427	530	470	72	8672	807	193	747	253
93	8145	956	44	886	114	820	180	582	418	538	462	71	8696	821	179	759	241
92	8172	970	30	899	101	832	168	590	410	546	454	70	8721	835	165	772	228
91	8199	885	15	913	87	845	155	599	401	554	446	69	8745	849	151	785	215
90	8228	"	"	927	73	858	142	609	391	563	437	68	8769	864	136	799	201
89	8254	"	"	941	59	871	129	618	382	571	429	67	8793	880	120	813	187
88	8279	"	"	955	45	884	116	627	373	580	420	66	8816	896	104	828	172
87	8305	"	"	970	30	898	102	637	363	589	411	65	8840	911	89	843	157
86	8331	"	"	985	15	912	88	646	354	598	402	64	8863	928	72	858	142
85	8357	"	"	"	"	926	74	656	344	607	393	63	8886	946	54	874	126
84	8382	"	"	"	"	940	60	667	333	616	384	62	8908	963	37	891	109
83	8408	"	"	"	"	955	45	677	323	626	374	61	8932	981	19	907	93
82	8434	"	"	"	"	969	31	687	313	636	364	60	8956	"	"	925	75
81	8459	"	"	"	"	994	16	698	302	646	354	59	8979	"	"	943	57
80	8483	"	"	"	"	"	"	709	291	656	345	58	9001	"	"	961	39
79	8508	"	"	"	"	"	"	720	280	666	334	57	9025	"	"	980	20

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Editorial.

THE EXAMINATIONS.

In another part of the JOURNAL will be found the official report of the Examiners, from which it will be seen that in regard to the number of candidates examined, and the generall proficiency attained, the late examinations were amongst the most successful yet held under the auspices of the College. Of the twenty-four candidates who presented themselves, seventeen succeeded in passing the ordeal, and several of those whose names appear at the head of the list, obtained marks indicating a very high degree of proficiency. Prominent amongst these is Mr. Eadie, of Brantford, who obtained 96 marks; and Mr. Watters, of Ottawa, who took 90 out of a possible 100.

The examination may be thus tabulated with those which preceded it:—

Date.	No. of Candidates.	No passed.	Highest No. of Marks.	Average.
Aug. 1871	5	4	74.00	72 00
Feb. 1872	10	7	91.00	79.00
Aug. 1872	16	12	99.50	79.00
Feb. 1873	13	10	90.25	78.90
Aug. 1873	12	9	81.50	68.52
Feb. 1874	24	17	96.00	72.29
	80	59		

The questions in the various subjects were as follows:—

PHARMACY.

Examiner—MR. SHUTTLEWORTH.

1. State the number of grains (1) in a pound, avoirdupois and troy; (2) in an eighth of an ounce, avoir. and troy; (3) in a gramme; (4) the number of minims in a pint, imperial and wine; (5) the weight of a minim, imperial and wine; (6) the measure, imperial, nearest corresponding to a litre; (7) the approximate measurement of a tablespoon; (8) the average number of drops in a drachm of water; (9) in a drachm of chloroform; (10) in a drachm of tincture of opium.
2. What quantities of commercial alcohol, 65 over proof, sp. gr. ·819, will be required to make one imperial pint of *Spiritus Rectificatus*; and one imperial pint of *Spiritus Tenuior;* and what are the specific gravities of these preparations?
3. What is the usual temperature for taking specific gravities? Reduce this degree from the Fahrenheit to the Centigrade scale.

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4. State the conditions favorable to solution, evaporation and crystallization.
5. What menstrua are required in preparing *Tincturæ Aconiti, Cardam. co, Lobeliæ Ætheria, Myrrhæ, Opii, and Valerianæ Ammon.?* Note the cases in which maceration or percolation are respectively employed?
6. Give the proportion of opium in each of the following preparations:—Confection, extract, tincture, ammoniated tincture, wine, and compound powder of ipecac.
7. Describe the mode of preparation, name the ingredients, give the tests and characteristics, and state the dose of *Liquor Potassæ.*
8. How would you estimate the strength of the mineral acids?
9. Describe the manner of preparing *Ferri Carb. Sacch.; Liq. Ferri Perchlor. fort.*, and *Syr. Ferri Iodidi.* Note the precautions to be taken, and give the characteristics of the products.
10. Name samples of pharmaceutical preparations presented for recognition, and answer verbal questions regarding them.

MATERIA MEDICA.

Examiner.—MR. YEOMANS.

1.—What is an anæsthetic? Give those most commonly used.
2.—Give six of the leading preparations of mercury, with their doses and uses.
3.—Fowler's Solution: give officinal name, dose, and quantity of arsenic in each fluid drachm.
4.—Is there any similarity in operation of *Tinct. Hyosciam* and *Tinct. Opii?* If so mention it, and give any difference which may exist.
5.—Give dose, operation, and use, of following Tinctures: *Rhei Co., Belladonnæ, Cannab. Indicæ, Digitalis, Aconiti and Ferri Perchloridi.*
6.—Opium: Give the botanical name of the plant from which it is derived; describe the manner of collection; name the common adulterations; enumerate the alkaloids contained, and state the per centage of morphia which opium should contain.
7.—Atropia; from whence derived? Give its operation and use.
8.—What are the best emetics in treatment of poisoning with opium.
9.—Give the active principles derived from Peruvian Bark, with their doses and use.
10.—Distinguish, and give doses of samples.

CHEMISTRY.

Examiner.—MR. SHUTTLEWORTH.

1.—State the laws of Constant, Multiple, and Reciprocal Proportions.
2.—Give the formula and combining weights of Sulphuric, Nitric and Hydrochloric Acids.
3.—What re-agents would you employ for detecting the presence of each of the above acids?
4.—Give the mode of preparing the green and red iodides of mercury; and describe by equations, the chemical changes which occur.
5.—Describe by diagrams, or equations, the action of dilute sulphuric acid, and dilute muriatic acid, on iron.
6.—How would you estimate the quantity of silver in a sample of the nitrate? What proportion is present in the pure salt?
7.—What is meant by water of crystallization? Give examples of salts containing it, and state the quantity of *Sodæ Carb. exsiccata* which

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can be obtained from 100 grains of the crystallized carbonate—$Na_2CO_3.10H_2O$.

8.—By what tests would you distinguish between citric and tartaric acids, in powder, or solution.

9.—Describe a convenient form of apparatus; state the ingredients required; and give the mode of preparation of an aqueous solution of sulphurous acid gas.

10.—Name samples of chemical products presented for recognition, and answer verbal questions regarding them.

BOTANY.

Examiner—MR. YEOMANS.

1. Give order of classification in botany, proceeding from highest to lowest.
2. What is a phanogamous plant?
3. What is the radicle of a seed?
4. Does any difference exist in manner of growth of stems and roots of plants?
5. Name some of the different forms of leaves, giving examples.
6. How do you distinguish monocotyledonous, dicotyledonous, and polycotyledonous plants? Give examples of each.
7. Red pepper; *(Capsicum Annuum)*—give class, order, and description of plant.
8. Describe structure of stems in exogenous plants.
9. Give botanical name for Solomon's Seal, and description of plant.
10. To what series do mosses and ferns belong.

PRACTICAL DISPENSING.

Examiner—MR. MILLER.

Dispense the following prescriptions, correcting any errors which may be found:

I. R.—Pulv. Rhei., grs. xxiv.
Ext. Aloes., grs. xviii.
Pulv. Myrrh, grs. xii.
Ol. Carui, m. x.
Misce. et fiat massa. in pilulas xii. dividenda.

II. R.—Bals. Copaib, ʒvi.
Tinct. Buchu, ʒss.
Spt. Æther Nit., ʒvi
Spt. Lavand. Co., ʒi.
Liq. Potassæ, ʒi.
M. ft. mist.; sig. cujus sumat coch. min. ter in die.

III. R.—Syr. Scillæ Co., ʒiss.
Antim. Tart., ʒii.
Tinct. Camph. Co., ʒss.
Vin. Ipecac., ʒvj.
Syr. Simp. ad., ʒvj.
M. ft mist. sig. cujus. sumat. coch. mag. bis vel ter in die.

IV. R.—Tr. Hyoscyam, ʒss.
Ext. Belladon. fl., ʒij.
Tr. Camph. Co., ʒj.
Spt. Æther, Nit., ʒvj.
Aqua, ad., ʒviij.
M. ft. mist.; sig. cujus sumat coch. mag. om hora.

V. R.—Emp. Cantharidis,
Ft. emp. 4×6 inches.

VI.—Translate fully into English the five foregoing prescriptions.

VII.—Write a prescription in Latin for a six ounce mixture, each dose to contain ½ grain quinine, fifteen minims tincture of iron, twenty minims tincture of columbo, and sufficient water to make up the quantity required.

VIII.—Write a prescription in Latin for the following: one ounce compound syrup of squills, six drachms paregoric, and two drachms

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antimonial wine, with sufficient simple syrup to make a four ounce mixture; dose, one tablespoonful.

IX.—Give approximate measurement of a teacup, a wineglass, a tablespoon, and a teaspoon; with full Latin names; and also give abbreviations for the two latter.

X.—Translate into English, and give full Latin names for the following abbreviations: coch.—cong.—haust.—ft.—p. r. n.—sig.

THE SYMPTOMS OF COLCHICUM POISONING.

Our readers will remember the fearful cases of poisoning which occurred at Montreal, some details of which were given in the JOURNAL for December. At that time we had not learned the entire particulars, nor yet the full extent of the disaster. These have, however, been fully supplied by the publication of a pamphlet—noticed in another column—in which Dr. G. W. Major, the physician in attendance, details, at considerable length, the particulars of the occurrence, and especially points out those facts of medical interest:

It appears that seventeen persons were, in all, affected; seven of these died within nineteen and twenty-eight hours from the time of taking the poison; the remainder recovered, the period of convalescence extending from one to twenty-six days.

Opportunities for studying the action of colchicum, in poisonous doses, have not been frequent. Dr. Major's experience extends over a number of instances almost equal to that of all previous observers, as only about eight fatal cases are reported by toxicologists. It is well that the details of the Montreal cases have been so accurately noted and preserved, but it is much to be regretted that these observations are confined to the effects of the drug as noticed during the life of the patient, and that *post mortem* examinations were not more strongly insisted on.

The wine of colchicum taken was not that of the root, as ordered in the *British Pharmacopœia*, but was made from the seed, according to the directions of the *U. S. Pharmacopœia*. Dr. Major states the quantity of seed in this preparation to be four ounces to the pint, but this is an error, as only half that quantity is ordered (two troy ounces to one wine pint). The smallest quantity of the wine which produced a fatal result was three ounces—this was in the case of an adult female; the largest quantity producing death

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was ten ounces. Eleven ounces were, however, taken by one of the men who ultimately recovered. In this instance the symptoms were very marked, and a period of twenty-six days elapsed before recovery.

The general symptoms are thus described:

"In from forty-five minutes to one hour and a half after taking the wine, vomiting ensued. The contents of the stomach were first rejected, then bile or mucus; afterwards a fluid similar to 'rice water' of cholera.

"When the amount of poison taken was very great, the purging came on simultaneously with the vomiting—but if only a small quantity, comparatively speaking, had been swallowed, the evacuation of the bowels was delayed for several hours. The passages were first the natural fœces, then bilious stools, next 'rice water'—a very large amount of a frothy, slimy secretion, compared by one of the patients to clean soap suds. In no case were there any traces of blood to be found. The vomiting continued until the last moment in the fatal cases, and the bowels were emptied involuntarily. Cramps were severe in the stomach, bowels, and legs. Severe pains were felt in the knee joints in some. And in two cases very markedly in the left shoulder, so much so, indeed, as to be a continual cause of complaint, and avoidance of lying on the left side. Rubbing was frequently demanded for relief. In the majority there was numbness from the elbow to the wrist; cramps of the fingers, especially the second finger, and in one case extreme numbness of the thumbs under the nails. This latter peculiarity was present even for twenty-six days after. In the case of the boy Thayer, there was great pain between the shoulders. The features (twenty hours after the accident) were pinched and drawn, lips and nose blue, as also the lobes of the ears. The eyes were congested, pupils dilated slightly; voice hoarse and husky, and pain was experienced in speaking.

"Feet and lower extremities icy cold, as also were the hands and arms. The rest of the body had a warmish, clammy feel, but was below the normal temperature. The pulse was rapid, 125 to 145 or more in the minute, small, compressible, intermitting, and at times imperceptible at the wrist, though it could be found at the elbow with some trouble, The temporal arteries were difficult of detection, even the carotids required patience to distinguish. For several hours before death they were almost pulseless, the heart's impulse was not to be felt over the chest, and even with difficulty heard on applying the ear to the chest wall. The sound might be likened to a blowing sound, or a murmur, or to a heart heard at a very great distance, or through a stone wall, both sounds lapsing into one.

"Respiration was full and easy, and was well maintained throughout. The pulse respiration ratio was borne out throughout.

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"The sufferers were sensible to the last and throughout. One case terminated with a slight convulsive effort. All sat up before dying, falling back in less than an instant. No headache was complained of. Muscular strength was retained. They were all able to sit up,—lift a cup to their lips, or even walk.

"They were perfectly sleepless. In two recoveries there appeared a pustular eruption on the face and lower extremities, resembling in its character poisoned wounds.

In the case of the boy Thayer, while sawing wood, an hour after drinking the wine, he was seized with violent retching and vomiting, succeeded by a 'fit,' which, from the description, resembled a convulsive attack. Thumbs were turned in, with the fingers closed over them.

"The amount of wine taken varied from one mouthful to 15 or more ounces.

"The symptoms in every case were proportionate to the amount of wine taken.

"All the fatal cases terminated in from 19 to 28 hours.

"After death the features assumed a placid, quiet expression; dependent parts of the body were tinged blue."

Death of Prof. Procter.—The death is announced of Wm. Procter, jr., Vice-President of the Philadelphia College of Pharmacy, and Professor of Practical Pharmacy in the same institution. This unfortunate event took place at an early hour on Tuesday morning, February 10th, and is attributed to heart disease. The Professor had lectured as usual at the College, on Monday evening, and appeared to be in excellent health up to shortly after midnight, when he was suddenly taken ill, and almost immediately afterwards expired. Prof. Procter was a native of Baltimore, and at the time of his death was about fifty-nine years of age. He was associated for twenty years—from 1847 to 1867—with the Faculty of the Philadelphia College of Pharmacy, and also held the position of editor of the *American Journal of Pharmacy* from 1850 until 1871, when he resigned. American pharmacy owes much to Professor Procter, and his loss will be severely felt. In our next issue we hope to give a more extended notice of the life of our respected confrere.

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Editorial Summary.

Adulteration of Powdered Ipecac.—Mr. J. Mercer, (*Pharm. Jour. & Trans.*) found almond meal in two samples of powdered ipecac, obtained from respectable wholesale dealers in England. He was first led to respect the adulteration from the fact that a tincture made from one of the samples evolved the odor of oil of bitter almonds. Subsequently, sufficient hydrocyanic acid was obtained to be quite sensetive to the reagents applied. The dealers from whom the powders were obtained were apparently ignorant of the adulteration, and could only account for it by assuming that part of the root sent to the mill for powdering had been abstracted by some of the workmen, and that almond meal has been substituted in order to cover up the theft. In order to detect the adulteration the writer recommends that some of the suspected powder be made into a paste with water, and the mixture be allowed to stand in a warm place for half-an-hour. If, at the expiration of that time, there be no trace of a hydrocyanic odor, the sample may be considered free from almond meal.

Abortive Treatment of Boils.—A writer in the Cincinnati *Lancet* recommends the following local application for stopping the progress of incipient boils, and for relieving the intense pain attendant on a more advanced stage. The lotion should be applied every fifteen minutes, or as fast as it becomes dry, so that by a few applications there may be produced a firm coating around the affected part:

℞. Tinct. Arnicæ, U. S. P.
Acid. Tannic
Pulv. Acaciæ, *a. a.* ʒi

The mixture should be used as soon as prepared.

New Antiseptic Dressing for Wounds.—Mr. Magnes-Lahens proposes the use of a powder produced by triturating one part of coal tar with two or three of powdered charcoal. This dressing is easily removed by cold water, and is not at all irritating.

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Transactions of Pharmaceutical Colleges and Societies.

MINUTES OF THE SEMI-ANNUAL MEETING OF THE COUNCIL OF THE ONTARIO COLLEGE OF PHARMACY.

The regular semi-annual meeting of the Council was held on Wednesday, the 4th February, 1874; the following members being present:

Mr. B. Lyman, President, Messrs. Hugh Miller, N. C. Love, J. T. Shapter, J. W. Bickle, F. Jordan, Chas. Brent, L. W. Yeomans, E. Harvey, E. H. Parker. The minutes of the meeting held 6th August, 1873, were read, and on motion of Mr. Harvey, seconded by Mr. Jordan, were adopted.

Business arising out of the minutes was then taken up, the first being the report of the Committee on Amendments.

The Committee on Amendments to the Pharmacy Act beg to report as follows:—

The subject which first engaged the attention of your Committee related to the registration of unqualified partners. 1st, Whether each individual member of a firm should be compelled to register; 2nd, Whether a qualified person might take a partner who was not qualified, and thus entitle the latter to registration. After mature consideration, your Committee have arrived at the conclusion that it would not be at all advisable or expedient to change the present law, which requires that each member of a firm must be registered, and that each must show evidence of qualification ere registration can be effected.

For the safety of the public, as well as the interests of Pharmacy generally, it appears necessary that some steps should be taken to ensure the better education and qualification of apprentices and assistants. In regard to this matter we have not been able to arrive at a definite conclusion, but would beg to submit for your consideration the following possible solutions of the difficulty:—

The first plan consists in the compulsory examination and registration of those intending to become apprentices, and may be rendered as follows:—"On and after the day of in the year of our Lord , it shall be unlawful for any person to become apprenticed to any Pharmaceutical Chemist, or any Pharmaceutical Chemist to receive such apprentice, unless such intending apprentice shall have first been examined by the Board of Examiners, and shall have received from them a certificate of having

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paid the registration fee of one dollar, which said fee must be continued annually until the term of apprenticeship expires; when, before entering upon the duties of an assistant, he must present himself before the Board of Examiners and pass the examination as at present regulated for Pharmaceutical Chemists; and also pay into the hands of the Registrar the sum of two dollars, which fee must be continued annually, so long as such person occupies the position of an assistant."

Your Committee is scarcely of the opinion that this measure could be introduced at the present time, but would merely suggest it for your consideration.

It might be arranged that a clause could be inserted in the present Act, allowing assistants and apprentices the privilege of examination and registration; but it is very questionable whether such a provision would be taken advantage of to any great extent. We may remark that by the 19th section of the Act, it is competent for the Council to make rules and orders for the admission of apprentices and associates, provided such rules receive the sanction of the Lieutenant-Governor. It is not, therefore, absolutely necessary that the Act be altered in this respect.

In reference to the mode of election of Council, we would suggest the following addition to section 11: "But, until such first meeting of the new Council, the retiring Council shall continue to hold office."

To section 14 should be appended, "and should there be a vacancy in the Board of Examiners, the remaining examiners may appoint a person to act in the place of the absentee."

To section 15, which relates to the duties of the Registrar, may be added: "In case any member of the College is in default of any fees due under this Act, it shall also be the duty of the Registrar to commence legal proceedings for the punishment of such defaulter, as provided in section 25, within one calendar month from the date at which said fees should have been paid.

In section 25, after the words "Police Magistrate," insert, "on the deposition of the Registrar that such person is so offending.

All of which is respectfully submitted.

BENJAMIN LYMAN,
Chairman of Committee.

Mr. Lyman objected to the law preventing young men who had the necessary qualification, and were registered, from entering into partnership with those who were willing to find the means. He considered it would be unfair to deprive any one properly qualified from availing themselves of such an opportunity.

Mr. Bickle took a similar view of the case, and, after expressing himself on the subject, moved the following resolution, seconded by Mr. Miller:—

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Resolved, That the Report on Legislation be received, except that portion relating to Partnership, which shall be amended as follows:—That provision be made in an amendment to the Act providing that a regularly qualified druggist shall take into partnership one who is not a druggist, and carry on the business as a druggist, provided that the qualified party have the active management and oversight of the business.

The resolution was put to the meeting and declared lost.

Mr. Harvey then addressed the meeting in strong terms against the idea of admitting unqualified persons to the privilege of entering the drug business with qualified persons.

Mr. Jordan also spoke on the subject and took the same view of the matter.

Mr. Bickle rose to explain more fully that the intention of his resolution was not that of allowing indiscriminate use of qualified assistants to carry on business.

Mr. Shapter spoke in favour of the present Act as it relates to partnership, and considered it not desirable there should be any change.

Mr. Yeomans thought that for the safety of the public, and also for the protection of the members of the profession, it was not necessary to make any change in the present Act, as to the admission of members. He contended that it would not be beneficial to the interests of either to admit such as were incompetent.

Mr. Love moved the reception of the report, seconded by Mr. Harvey. Carried.

Mr. Shapter considered it expedient in the interest of the profession that apprentices should have a qualification and undergo a preliminary examination before being registered as such.

The Council then formed itself into a Committee of the Whole, and, after considerable discussion of the several clauses of the report, it was moved by Mr. Bickle, seconded by Mr. Yeomans, and resolved, "That the Committee on Legislation be empowered to bring before the House, and take such steps as may be necessary to secure the amendments proposed in the Act of Incorporation." Carried.

According to notice of motion for amendment to By-Law No. III. given at last meeting, it was moved by Mr. Yeomans, and seconded by Mr. Parker, That after the word "registrar," in the seventh line, the following words be inserted: "It shall also be his duty to place before the College at each meeting the papers upon which he may have issued any certificate of registration during the interval since last meeting of College. Carried.

The report of the Board of Examiners was read as follows:—

REPORT OF THE BOARD OF EXAMINERS.

Your Committee would beg to report that the sixth semi-annual

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examination, held in conformity to the Act, took place on Tuesday, February 3rd. Twenty-four candidates entered their names, but some of them had been unsuccessful at former examination, and were desirous of further trial. Twenty-three candidates were, in all, examined—one of those entering having declined the ordeal. The seventeen gentlemen named below we have found sufficiently proficient to be entitled to claim the diploma of the College:—

		No. of Marks.
1	A. B. Eadie, Brantford	95
2	H. Watters, Ottawa	86
3	R. W. Boyle, Barrie	85
4	G. B. Smith, St. Catherines	85
5	J. Nicolle, London	81
6	T. A. Baxter, London	80
7	W. J. Falkner, St. Catherines	80
8	J. T. Langrell, Ottawa	72
9	A. H. Hogg, London	71
10	A. M. Glass, London	70
11	G. W. McIntyre, St. Mary's	69
12	J. Y. Graham, Galt	66
13	W. J. Langford, Ottawa	63
14	T. C. Ingram, London	62
15	F. W. Meek, Strathroy	61
16	J. M. McKendrick, Hamilton	60
17	C. J. Ellison, Sarnia	60

The degree of proficiency shown by the seven unsuccessful candidates was very fair—the lowest number of marks obtained being 42.

Of the qualifications of Mr. Eadie and Mr. Watters, the first and second prizemen, we are pleased to speak very highly. We believe the first named gentleman has shown a proficiency only excelled in one instance by any candidate examined since the College has been in existence. We are also gratified to mention Messrs. Boyle and Smith, who have each obtained 85 marks, and are only one mark under the gentleman who is entitled to the second prize.

Owing to the indisposition of one of the members of the Board, as constituted at the last Council meeting, we have been compelled to choose another examiner, and have unanimously elected Mr. Miller to act during the present examination.

All of which is respectfully submitted.

E. B. Shuttleworth,
L. W. Yeomans,
Hugh Miller.

Moved by Mr. Bickle, seconded by Mr. Miller, that the report of the Board of Examiners be received and adopted. Carried.

The first prize was then presented by the President to Mr. Eadie, with expressions of the good wishes of the Council for his future career.

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Mr. Watters being present was presented with the second prize in like manner.

The Treasurers report was then read as follows :—

ONTARIO COLLEGE OF PHARMACY.

TREASURERS REPORT.

Kenneth Miller, Treasurer, in account with Ontario College of Pharmacy.

RECEIPTS.

1873.			
Aug 1.	To balance in Canadian Bank of Commerce	$2,323	86
"	" Cash from Registrar—account Journal	120	00
"	" " " Registration, Exam'rs fees &c.	88	00
" 30.	" " " Registration and Renewals...	32	31
Sept 27.	" " " " " "	118	00
Oct 3.	" " " " " "	82	00
" 18.	" " " " " "	58	13
Nov 8.	" " " " " "	50	00
Dec 13.	" " " " " "	48	00
"	" Interest on account in Canadian Bank of Commerce	44	00
1874.			
Jan 31.	" Cash from Registrar (Col. $122.00 Journal 204.75.)	326	75
		$3291	05

DISBURSEMENTS.

1873.			
Aug 1.	By Cash paid postage College account	$ 4	00
"	" " " postage Journal account	6	00
" 5.	" " " Monetary Times, Printing Journal	57	75
"	" " " Monetary Times, Printing list of Chemists	6	50
"	" " " Brown Bros., Binding Prizes	19	75
" 7.	" " " Geo. Hodgetts ½ year salary as Treasurer	50	00
"	" " " J. Roberts, mileage and expenses	24	00
"	" " " W. Saunders, " " " "	23	60
"	" " " F. Jordon, " " " "	12	64
"	" " " E. Harvey, " " " "	6	80
"	" " " L. W. Yeomans, " " "	11	60
"	" " " Chas. Brent, " " " "	7	20
"	" " " B. Lyman, " " " "	2	00
"	" " " Hugh Miller, " " " "	2	00
"	" " " Neil C. Love, " " " "	2	00
"	" " " J. T. Shapter, " " " "	2	00
"	" " " H. J, Rose, " " " "	12	00
"	" " " R. W. Elliot, " " " "	12	00
"	" " " Postage, College account	4	00
" 30.	" " " Carriage of Journals from Mr. Rose to Mr. Hodgetts store		25
Sept 1.	" " " Postage	9	00
" 9.	" " " Monetary Times, Examination Papers 3.50 Journal $57.00	60	50
" 18	" " " W. Ellingsworth, services rendered	25	00
" 25	" " " E. B. Shuttleworth, 3 mos. sal. & postage	131	00
" 25	" " " Commission on Mr. Wood's cheque		25

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Oct.	1	By Cash Paid	Postage—Journal, $3.50; College, $3.00...	6	50
"	1	" "	Monetary Times, printing Journal	57	00
"	16	" "	Lyman Bros. & Co.....	17	89
"	18	" "	London Improvement Society	19	00
"	20	" "	Mail Printing Co.....	10	00
Nov.	8	" "	Postage	6	50
"	8	" "	Commission on Picton Cheque		25
"	20	" "	Monetary Times, printing Journal	59	25
Dec.	1	" "	H. J. Rose account	110	48
"	9	" "	Monetary Times	57	00
"	12	" "	Hastings & Peterkin, wood roller.....		50
"	12	" "	Postage	7	00
1874.					
Jan.	1	" "	Monetary Times, printing Journal	57	00
"	1	" "	Hunter, Rose & Co.....	2	50
"	17	" "	Copp, Clark & Co.....	67	00
"	31	" "	Globe Printing Co	22	50
"	31	" "	Postage	8	00
				2,291	84
			Balance on hand	1,000	21

We, the undersigned, appointed by the Ontario College of Pharmacy, have examined the above report, and compared it with vouchers, and find them all correct.

NEIL C. LOVE,
JOHN T. SHAPTER, } Auditors.

Moved by Mr. Jordan, seconded by Mr. Parker, That the report of the Treasurer be received and adopted.—Carried.

The Registrar's report was then read:

REGISTRAR'S REPORT.

To the Council of the Ontario College of Pharmacy:

GENTLEMEN,—Your Register begs to report, that when he came into office in August last he found on looking over the Register, a large number of members in arrear for fees for the year 1872, and also for the current year. At the request of the President I prepared a list of the defaulters to the number of one hundred and seventy-seven, and submitted the same to him. A circular was prepared and sent to each one, setting forth their obligation in the matter, which resulted in 13 paying the fee for 1872 and 1873, and 52 for the current year; 35 were erased as being out of business, qualified physician, or being assistants, and in several cases the parties had left the country, which, with one or two deaths, leaves at present 76 on the list of defaulters; 24 of whom are registered as qualified assistants, and may have removed to some other locality. The remaining 52 are registered in business, of whom I have a corrected list to present to the Council, which may result in finding others out of business, &c; those found to be still in default may then be proceeded against according to law.

I would call special attention to the fact that many of the mem-

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bers, when sending their fees, complain of parties in the same place who are carrying on business and selling poisons in open violation of the Pharmacy Act, thus rendering themselves liable to prosecution, should the Council see fit to take legal proceedings against them.

During the last six months 22 new registrations have been made, the qualification papers being in each case satisfactory to the members of the Council resident in the city. Two applications have been refused, the applicants not having served the time required by the Act.

The number of renewals for the current year was 491; the total number of members in good standing, including of those who have passed the examination, is 532.

The discontinuance of the JOURNAL to the members who had not paid the registration fee for 1872, as my predecessor reported a year ago, has been a source of trouble, some of the JOURNALS being out of print, so that complete fyles could not be supplied to those who paid up their back fees. I make bold to suggest the advisability of reprinting some of the numbers out of print, or of which only some five or six copies may be on hand, as many members are wishing to get their volumes bound.

Referring to the financial management of the JOURNAL, I have to report with regret that I have made no more progress than did Mr. Rose, in fact no new advertisements of any account have been added.

If the subscription to the JOURNAL were reduced from $3 per annum to $2 I have no doubt many medical men and others might be induced to subscribe for it. At present 700 copies per month are printed at a cost of $57; if more were struck off they might be got for about $3 per 100 for the excess.

Your Registrar has adopted a new plan of mailing the JOURNAL to the members, instead of sending each one separately at a cost of one cent, they are sent in parcels to each town, in accordance with the Post Office Act, at the rate of 1 cent per 4 oz., thereby effecting a saving in postage of from $25 to $30 per annum.

The receipts for the JOURNAL account for the past six months have been as follows:

DR.

For advertising	$190 00
Subscriptions and Back Numbers	14 75
	$204 75

CR.

By Treasurer	$204 75

Outstanding account, $674.34, about some of which there seems to be some misunderstanding.

Respectfully submitted,

GEO. HODGETTS, *Registrar.*

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Moved by Mr. Love, seconded by Mr. Brent, that the report of the Registrar be received and adopted. Carried.

The list of names of defaulters was read, and it was found that some of them had retired from business, thus reducing the list considerably.

The following letter from Mr. Saunders, Vice-President, was read:—

B. Lyman, Esq.

My Dear Sir,—I very much regret that I shall be unable to attend the meeting of the Council on Wednesday; other engagements will oblige me to stay at home. This will be the first time I have failed to put in an appearance, and I hope I shall be more favorably situated in future.

I was present at the last meeting of the American Pharmaceutical Association at Richmond. In consequence of your absence in Montreal at that time, I did not write for credentials, but on arrival at Richmond the Committee on Credentials accepted the explanation I gave, and recognized me as a representative from the Ontario College of Pharmacy. So our College was represented at that annual gathering. Being the first meeting the Association had ever held south of Washington, it attracted much interest, and an unusually large number of members were present. The druggists of Richmond, and the inhabitants generally, did their best to make our stay as pleasant as possible, so that all the members enjoyed themselves thoroughly. A large number of papers were read at the meetings, and during the intervals every facility was afforded the members for visiting every place of interest in the neighbourhood. For this purpose a large number of carriages were in waiting at all hours of the day to take the visitors free of all charge wherever they might feel disposed to go. Your representative was honored by being elected first Vice-President of the Association—an honour never before conferred on any one resident outside of the United States. While thanking the Association personally, your representative did not fail to recognize in this a kindly acknowledgement of their esteem towards our Ontario College of Pharmacy.

With kindest regards to my fellow members of the Council,

Yours very truly,

Wm. Saunders.

Office, Dundas Street, London, Feb. 3, 1874.

Moved by Mr. Bickle, seconded by Mr. Shapter,

Resolved, That the letter of W. Saunders, of London, Vice-President, be received, and we regret his absence. His report of his visit to Richmond, at the late meeting of the American Pharmaceutical Association, is received with pleasure; and, while thankful for his able representation of our College, we are gratified

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with the recognition of Mr. Saunders' worth, and the good feeling shown to him and this College, in the honour conferred on him by his election to the position of 1st Vice-President. Carried.

A petition of appeal was read from Mr. A. W. Bleasdell, of Trenton, against the decision of the Registrar, in refusing to register the appellant, on the ground that he had not served the necessary time as required by the Pharmacy Act. After reading the certificates and correspondence on the subject, it was moved by Mr. Harvey, seconded by Mr. Love, That the application be refused, Mr. Bleasdell not having served four years, as required by sections 4 and 17 of the Act. Carried.

Mr. Parker, of Owen Sound, tendered, through Mr. Yeomans, his resignation as member of the Council, on account of other business requiring his time and attention. He named Mr. Paffard, of Niagara, as his successor. After some conversation on the subject it was moved by Mr. Yeomans, seconded by Mr. Shapter, That Mr. Paffard be elected to the Council in the place of Mr. Parker. Carried.

Mr. Shapter also resigned his position at the Council Board, in consequence of indisposition, and moved, seconded by Mr. Miller, That Mr. Gregory of Lindsay be elected as his successor. Carried.

Mr. Yeomans gave notice of motion for the following new By-law:

That in view of the existence of certain conflicting resolutions regarding the constitution and conduct of the Board of Examiners, and the manner of conducting the examination, and of estimating ratings thereof, it is necessary that a by-law be introduced reconciling, consolidating and permanently settling the matter. It is therefore resolved that

"The Board of Examiners shall consist of three persons appointed by the Council. In the event of any vacancy occuring, the remaining members of the Board shall have the power of electing a sultable person to fill such vacancy. Each examiner shall examine in one or more subjects, and shall be responsible for the estimation of the value of the answers given on such subjects. The subjects for examination shall be *Chemistry*, on which ten questions shall be given, each question having the value of 2·0; *Pharmacy*, ten questions of like value; *Materia Medica*, ten questions of like value; *Prescriptions*, ten questions of like value; *Botany*, ten questions having a value of 1·5 each; *Practical Dispensing*, a practical and verbal examination, having a total value of 5·0, making in all the total number of marks 100·0.

There being no other business, it was moved by Mr. Harvey, seconded by Mr. Miller that the Council adjourn.

The Council adjourned.

GEO. HODGETTS.
Secretary.

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Books and Pamphlets.

NOTES ON PHARMACOPŒIAL PREPARATIONS, B. P., 1867. Specially arranged for the use of Students preparing for examination. By W. HANDSELL GRIFFITHS, Ph. D., L.R.C.P.E., Librarian Royal College of Surgeons in Ireland, etc., etc. London: Bailliere, Tindall, and Cox, 1873, p. 110.

The object of this little work is sufficiently set forth in the title; it is especially designed to *facilitate* the study of Pharmacy. The concise and systematic arrangement of the subjects embraced, and the clear, short definitions and details will go far to accomplish this end. All the preparations of the *Pharmacopœia* are, as far as possible, classified and tabulated; a short description of the manner of preparation, the proportions or percentage of the active ingredients, and the test for each product being given.

The "Appendix" contains an abstract of the method of preparing the officinal test solutions for volumetric analysis, and gives, in outline, an explanation of their use, together with the characteristics of the test solutions which are employed for qualitative examinations.

We are not acquainted with any method by which a student can more easily obtain and be enabled to retain a knowledge of the contents of the Pharmacopœia, than by a careful study of Dr. Griffiths' Notes; and we have great pleasure in recommending the work to our Canadian students.

TABLES FOR SIMPLE QUALITATIVE ANALYSIS, by H. H. CROFT. Toronto: Copp, Clark & Co., 1874.

These tables are comprised in a pamphlet of about twenty pages, and are intended as a guide for laboratory practice in elementary chemical analysis. They are made to apply exclusively to simple salts, consisting of one base and one acid; or of the acids and bases uncombined. The arrangement of the tables is such as to afford the greatest facility for reference; while the entire set of tables, taken in the order in which they are given, form as good a system of practice as can be devised. In arranging these details, and putting them together in their present handy form, Professor Croft has performed a labor from which his own pupils, as well as students generally, cannot fail to derive much benefit.

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FORMULAS FOR ELIXIRS, adopted by the American Pharmaceutical Association, at its twenty-first annual meeting, held at Richmond, Virginia, September, 1873, and recommended to be used by Physicians and Pharmacists.

This pamphlet is issued in accordance with a resolution of the American Pharmaceutical Association, which decided that if physicians must prescribe elixirs, or druggists dispense them, it is necessary that they should be prepared according to some authorized standard, such as that now furnished. The report is, therefore, given with the expressed hope that Medical and Pharmaceutical Societies throughout the United States, and perhaps Canada, "may deem it expedient to take such action in this matter as may tend to secure this much-desired uniformity."

It must not be supposed that the Committee to whom the getting up of this report was entrusted had any strong predilections towards the elixir business. We judge that the task was one of duty rather than of love; but nevertheless, the work has not been less faithfully or scrupulously performed, and if the little pamphlet before us is instrumental in mitigating to any extent the elixir nuisance, or of reducing to any degree of uniformity the heterogeneous preparations with which the market has been flooded, we are sure the Committee will have good grounds for congratulation.

The various formulas given will be found in another part of the Journal, and, while giving them publicity, we may say that the source from which they emanate justifies their being received with confidence.

NEW EDITION OF THE BRITISH PHARMACOPŒIA.

From our English exchanges we learn that a new edition of this work is so far advanced as to be in type, and will shortly be issued. Our readers have been apprised of the reasons which led to this undertaking. The "Addendum" or appendix, which is to embrace the list of new remedies, will be comprised in about twenty-four pages, and will render officinal the following preparations:—Tinct. aurantii recentis; tinct. ipecac; succus belladonna and hyoscyami; several new suppositories; a compound powder of elaterium; a new pill of jalap; pepsin; phosphorated oil; mustard paper; a solution of morphia for hypodermic injection; solution of citrate of magnesia; fluid extract of liquorice; oxide of bismuth; hypophosphite of soda; and nitrate of amyl. We are not aware that this new edition of the Pharmacopœia will differ from that now

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in use, except in regard to the appendix, although it may be possible that errors in the body of the work may be corrected. A number of these errors relate to stated specific gravities, and have been pointed out by British writers as well as by ourselves.

CLINICAL REPORTS OF SEVENTEEN CASES OF ACCIDENTAL POISONING BY WINE OF COLCHICUM. By George W. Major, B.A., M.D., etc. Read before the Medico-Chirurgical Society of Montreal.

THE TENNESSEE PHARMACAL GAZETTE, *an Eclectic Monthly of Practical Pharmacy.*

This is the title of a new journal published under the auspices of the Tennessee College of Pharmacy, and the Tennessee Pharmaceutical Association. It is edited by Benj. Lillard, Phar. D., and Thos. Black, M.D., both gentlemen being connected with the staff of the college above named. The number before us contains a number of interesting papers, and considerable space is also devoted to matters relating to the association of which this journal is the organ. The *Gazette* has our best wishes.

SIXTH ANNUAL REPORT OF THE TORONTO EYE AND EAR DISPENSARY; containing constitution and of Act of Incorporation.

Varieties.

IMPROVED TEST FOR SACCHARINE URINE.—Dr. Seegen's modification of Trommer's test consists in the preliminary filtration of urine through animal charcoal. This removes the uric acid and other matters which interfere with the action of Trommer's test, and leaves a colorless fluid, which is highly sensitive to the test. It is a delicate qualitative, but not a quantitative method.—*British Medical Journal.*

SUGAR IN LEAVES.—M. A. Petit has, on a former occasion, stated that the leaves of the grape vine contain from 20 to 30 grams of glucose and, 13 to 16 grams of tartaric acid per kilogram. The author now states that the greatest portion of the acid is in the state of cream of tartar, about one-third only being uncombined, and that the sugar consists of cane and invert sugar. On treating the liquid repeatedly with animal charcoal, it is readily obtained colorless and free from tannin; for one kilogram of leaves the author obtained then 9·20 grm. cane sugar and 26·55 grm. glucose; by another experiment 15·80 grm. cane sugar and 17·49 grm. glucose. The leaves of the cherry and peach likewise contain a mixture of the two sugars; from one kilogram of the latter 33 grams of cane sugar and 12 grams of glucose were obtained.—*Journ. de Pharm. et de Chim.*, 1874, *Jan.*, 41. *in Am. Journ. Pharm.*

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Drugs, Medicines, &c.	$ c.	$ c.
Acid, Acetic, fort.	0 14 @	0 15
Benzoic, pure	0 23	0 30
Citric	1 40	1 50
Muriatic	0 05	0 06
Nitric	0 11½	0 15
Oxalic	0 22	0 26
Sulphuric	0 03¾	0 07
Tartaric, pulv.	0 50	0 50
Ammon, carb. casks	0 23	0 24
" jars	0 23	0 24
Liquor, 880	0 25	0 28
Muriate	0 14	0 15
Nitrate	0 45	0 60
Æther, Acetic	0 45	0 50
Nitrous	0 35	0 37
Sulphuric	0 50	0 50
Antim. Crude, pulv	0 15	0 17
Tart "	0 55	0 65
Alcohol, 95 per ct.....Cash	1 60	1 72
Arrowroot, Jamaica	0 18	0 22
Bermuda	0 50	0 65
Alum	0 02¾	0 03½
Balsam, Canada	0 50	0 50
Copaiba	0 95	1 00
Peru	3 75	4 00
Tolu	0 90	1 00
Bark, Bayberry, pulv.	0 20	0 22
Canella	0 17	0 20
Peruvian, yel. pulv.	0 42	0 50
" red "	2 10	2 20
Slippery Elm, g. b.	0 15	0 20
" flour, packets	0 28	0 32
Sassafras	0 17	0 20
Berries, Cubebs, ground	0 20	0 25
Juniper	0 06	0 10
Beans, Tonquin	0 62	1 10
Vanilla	30 00	36 00
Bismuth, Alb	3 30	4 00
Carb.	3 50	4 00
Camphor, Crude	0 38	0 40
Refined	0 45	0 50
Cantharides	2 60	3 80
Powdered	2 75	3 90
Charcoal, Animal	0 04	0 06
Wood, powdered	0 10	0 15
Chiretta	0 20	0 30
Chloroform	1 10	1 65
Cochineal, S. G.	0 75	0 90
Black	1 10	1 20
Colocynth, pulv.	0 50	0 60
Collodion	0 90	1 00
Elaterium .....oz	3 20	4 00
Ergot	0 35	0 45
Extract Belladonna	1 50	1 60
Colocynth, Co	1 25	1 75
Gentian	0 50	0 60
Hemlock, Ang	0 85	0 95
Henbane, "	1 50	1 60
Jalap	5 00	5 50
Mandrake	1 75	2 00
Nux Vomic.....oz	0 40	0 50
Opium .....oz	1 50	
Rhubarb	5 00	5 50
Sarsap. Hon. Co.	1 00	1 20
" Jam. Co.	3 50	4 00
Taraxacum, Ang	0 70	0 80
Flowers, Arnica	0 17	0 25
Chamomile	0 32	0 40
Gum, Aloes, Barb. extra	0 70	0 80
" " good	0 40	0 50
" Cape	0 16	0 20
" " powdered	0 20	0 30
Socot	0 50	1 35
" " pulv	1 00	0 00
Arabic, White	0 70	0 75
" powdered	0 60	0 75
" sorts	0 24	0 30
" " powdered	0 42	0 50
" com. Gedda	0 13	0 16
Assafœtida	0 40	0 42
British or Dextrine	0 13	0 15
Benzoin	0 35	0 75
Catechu	0 12	0 15
" powdered	0 25	0 30
Euphorb, pulv	0 35	0 40
Gamboge	1 40	1 50
Guaiacum	0 90	1 00
Myrrh	0 50	0 70

Drugs, Medicines, &c.—*Contd.*	$ c.	$ c.
Sang Dracon	0 60	0 70
Scammony, powdered	6 00	6 50
" Virg. "	14 50	—
Shellac, Orange	0 70	0 75
Gum, Shellac, liver	0 60	0 65
Storax	0 40	0 45
Tragacanth, flake	1 10	1 40
" common	0 53	0 65
Galls	0 28	0 32
Gelatine, Cox's 6d.	1 15	1 20
Glycerine, common	0 25	0 30
Vienna	0 29	0 30
Prices	0 60	0 75
Honey, Canada, best.	0 15	0 17
Lower Canada	0 14	0 16
Iron, Carb. Precip.	0 20	0 25
" Sacchar.	0 40	0 55
Citrate Ammon.	1 65	1 70
" & Quinine, oz.	0 55	0 58
" & Strychine	0 20	0 25
Sulphate, pure	0 08	0 10
Iodine, good	6 75	7 00
Resublimed	7 50	8 00
Jalapin	1 25	1 50
Kreosote	2 40	2 50
Leaves, Buchu	0 22	0 30
Foxglove	0 25	0 30
Henbane	0 35	0 40
Senna, Alex	0 27	0 60
" E. I.	0 14	0 20
" Tinnevilly	0 20	0 30
Uva Ursi	0 15	0 17
Lime, Carbolate.....brl	5 50	—
Chloride	0 05	0 06
Sulphate	0 08	0 12½
Lead, Acetate	0 15	0 16¾
Leptandrin.....oz.	0 60	—
Liq. Bismuth	0 50	0 75
Lye, Concentrated	1 75	2 00
Liquorice, Solazzi	0 50	0 55
Cassano	0 23	0 40
Other brands	0 14	0 25
Liquorice, Refined	0 35	0 45
Magnesia, Carb. 1 oz.	0 20	0 25
" 4 oz.	0 17	0 20
Calcined	0 65	0 75
Citrate.....gran.	0 63	0 75
Mercury	1 85	1 90
Bichlor	1 65	1 75
Chloride	1 80	1 90
C. Chalk	0 75	80
Nit. Oxyd	1 90	2 00
Morphia Acet	4 45	4 60
Mur.	4 45	4 60
Sulph.	4 60	4 75
Musk, pure grain.....oz	25 00	—
Canton	0 90	1 20
Oil, Amonds, sweet	0 40	0 45
" bitter	14 00	15 00
Aniseed	4 00	4 25
Bergamot, super	6 25	6 50
Caraway	3 20	3 50
Cassia	2 25	2 50
Castor, E. I	0 14	0 15
Crystal	0 22	0 25
Italian	0 26	0 28
Citronella	1 25	1 35
Cloves, Ang.	2 75	3 00
Cod Liver	1 5	1 50
Croton	1 75	2 00
Juniper Wood	0 80	1 00
Berries	6 00	7 00
Lavand, Ang.....oz.	0 90	1 00
Exotic	1 40	1 60
Lemon, super	4 60	5 75
ord	3 20	3 40
Orange	3 00	3 25
Origanum	0 65	0 75
Peppermint Ang.	13 00	14 40
" Amer.	5 00	5 50
Rose, Virgin	8 50	8 75
" good	6 80	7 00
Sassafras	0 75	1 90
Wintergreen	6 00	6 50
Wormwood, pure	4 00	6 50
Ointment, blue	1 30	1 40
Opium, Turkey	7 75	8 00
pulv.	10 00	10 50

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DRUGS, MEDICINES, &c.—*Cont'd*	$ c.	$ c
Orange Peel, opt.	0 30	0 36
" good	0 12½	0 20
Pill, Blue, Mass	1 30	1 40
Potash, Bi.chrom	0 23	0 27
Bi-tart	0 33	0 35
Carbonate	0 14	0 20
Chlorate	0 50	0 55
Nitrate	10 50	11 00
Potassium, Bromide	1 00	1 10
Cyanide	0 60	0 65
Iodide	6 00	6 25
Sulphuret	0 25	0 35
Pepsin, Boudault's....oz	1 40	—
Houghton's..... doz.	8 00	9 00
Morson's.....oz.	0 85	1 10
Phosphor.us	0 95	1 00
Podophyll' n	0 50	0 60
Quinine, Pelletier's	—	2 45
Howard's	2 65	—
" 100 oz. case.	2 65	—
" 25 oz. tin..	2 60	—
Root, Colombo	0 13	0 20
Curcuma, grd	0 12½	0 17
Dandelion	0 17	0 20
Elecampane	0 16	0 17
Gentian	0 08	0 10
" pulv	0 15	0 20
Hellebore, pulv	0 17	0 20
Ipecac, "	1 50	1 60
Jalap, Vera Cruz	90	1 15
" Tampico	0 70	1 00
Liquorice, select	0 12	0 13
" powdered	0 15	0 20
Mandrake "	0 20	0 25
Orris, "	0 20	0 25
Rhubarb, Turkey	2 50	2 75
" E. I.	1 10	1 20
" " pulv	1 20	1 30
" " 2nd	0 90	1 00
" French	0 75	—
Sarsap., Hond	0 40	0 45
" Jam	0 88	0 90
Squills	0 10	0 15½
Senega	1 10	1 20
Spigelia	0 25	0 30
Sal:, Epsom	2 25	3 00
Rochelle	0 32	0 35
Soda	0 02½	0 03
Seed, Anise	0 13	0 16
Canary	0 05	0 06
Cardamon	2 25	2 50
Fenugreek, g'd	0 09	0 10
Hemp	0 06½	—
Mustard, white	0 14	0 16
Saffron, American	1 00	1 10
Spanish	12 00	13 00
Santonine	7 50	8 00
Sago	0 08	0 09
Silver, Nitrate.....Cash	14 85	16 50
Soap Castile, mottled	0 11	0 14
Soda Ash	0 04	0 05
Bicarb. Newcastle	—	6 50
" Howard's	0 14	0 16
Caustic.	0 06½	0 06½
Spirits Ammon., arom	0 35	0 35
Strychnine, Crystals	2 25	2 50
Sulphur. Precip	0 10	0 12½
Sublimed	0 03½	0 05
Roll	0 03	0 04½
Vinegar, Wine, pure	0 55	0 60
Verdigris	0 35	0 40
Wax, White, pure	0 75	0 80
Zinc. Chloride.....oz	0 10	0 15
Sulphate, pure	0 10	0 15
" common	0 06	0 10
DYESTUFFS.		
Annatto	0 35 @	0 60
Aniline, Magenta, cryst	2 50	2 80
" liquid	2 00	—
Argols, ground	0 15	0 25
Blue Vitrol, pure	0 10	0 10
Camwood	0 06	0 09
Copperas, Green	0 01½	0 02½
Cudbear	0 16	0 25
Fustic, Cuban	0 02½	0 04
Indigo, Bengal	2 40	2 50
Madras	0 90	0 95
Extract	● 30	0 35

DYESTUFFS—*Continued.*		
Japonica	● 07½	0 08
Lacdye, powdered	● 33	0 38
Logwood	0 02	0 03
Logwood, Camp	0 02	0 3½
Extract	0 10	0 14
" 1 lb. bxs....	0 13	—
" ½ lb. "	0 14	—
Madder, best Dutch	0 13	0 15
2nd quality	0 12	0 14
Quercitron	0 03	0 05
Sumac	0 06	0 08
Tin, Muriate	0 10½	0 12½
Redwood	0 05	0 06
SPICES.		
Allspice	0 11½@	0 12
Cassia	0 39	0 40
Cloves	0 40	0 42
Cayenne	0 28	0 30
Ginger, E. I.	0 19	0 20
Jam	0 20	0 30
Mace	1 65	1 75
Mustard, com	0 20	0 25
Nutmegs	1 15	1 20
Pepper, Black	0 22½	0 23
White	0 48	0 50
PAINTS, DRY.		
Black, Lamp, com	0 07 @	0 08
" refined	0 25	● 30
Blue, Celestial	0 08	0 12
Prussian	0 65	0 75
Brown, Vandyke	0 10	0 12½
Chalk, White	0 01	0 01½
Green, Brunswick	0 07	0 10
Chrome	0 16	0 25
Paris	0 30	0 35
Magnesia	0 20	0 25
Litharge	0 07	0 09
Pink, Rose	0 12½	0 15
Red Lead	0 07½	0 08
Venetian	0 02½	0 03½
Sienna, B. & G	0 07	0 08
Umber	0 07	0 10
Vermillion, English	1 85	1 90
American	0 25	0 35
Whiting	0 85	0 90
White Lead, dry, gen	0 08½	0 09
" " No. 1	0 07	0 08
" " No. 2	0 05	0 07
Yellow Chrome	0 12½	0 35
" Ochre	0 02½	0 03½
Zinc White, Star	0 10	0 12
COLORS, IN OIL.		
Blue Paint	0 12 @	0 15
Fire Proof Paint	0 06	0 08
Green, Paris	0 30	0 37½
Red, Venetian	0 07	0 10
Patent Dryers, 1 lb tins	0 11	0 12
Putty	0 03½	0 04½
Yellow Ochre	0 08	0 12
White Lead, gen. 25 lb. tins..	2 50	—
" No. 1	2 25	—
" No. 2	2 00	—
" No. 3	1 75	—
" com	1 30	—
White Zinc, Snow	2 75	3 25
NAVAL STORES.		
Black Pitch	5 00 @	5 25
Rosin, Strained	4 50	—
Clear, pale	7 80	—
Spirits Turpentine	0 60	0 62
Tar Wood	5 50	5 75
OILS.		
Cod	0 63 @	0 70
Lard, extra	0 85	0 90
No. 1	0 75	0 80
No. 2	0 72	0 75
Linseed, Raw	0 75	0 80
Boiled	0 80	0 85
Olive, Common	1 10	1 20
Salad	1 80	2 30
" Pints, cases	4 20	4 40
" Quarts	3 25	3 50
Seal Oil, Pale	0 70	0 70
Straw	0 68	0 70
Sesame Salad	1 30	1 35
Sperm, genuine	2 30	2 40
Whale refined	● 90	● 95

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CANADIAN

PHARMACEUTICAL JOURNAL

VOL. VII, No. 9. TORONTO, APRIL, 1874. WHOLE No. LXXI

Original and Selected Papers.

LABORATORY NOTES.

BY E. B. SHUTTLEWORTH.

Use of Glycerin in the Estimation of Tannin.

The estimation of tannic acid by means of a solution of gelatin is generally a tedious and troublesome process. The precipitate formed is so slowly deposited that, without resorting to a filtration almost as inconvenient, it is difficult to determine the exact point when a sufficient quantity of the precipitant has been added, as also to separate the precipitate at the close of the operation. In order to ascertain the completion of the process, Wheeler* suggests that a tube, loosely closed at the bottom with sponge, be dipped into the solution; the filtered liquid which enters the tube is then tested with a further quantity of the gelatin solution. Muller† accelerates the clarification of the liquid by adding a certain proportion of alum. I have found that both these ends may be more easily accomplished

* Mem. Chem. Soc. iii. 319.

† Chem. Centr. 1859, 42. Watts' Dict. ii. 765.

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by adding to the tannin solution a small quantity of glycerin. The precipitate by gelatin subsides more or less readily according to the concentration of the solution.

As I have noted in a previous paper,* the precipitation of tannin may be altogether prevented by employing a very large proportion of glycerin, so that it is probable that in using a lesser quantity, a small proportion of the precipitate is retained in solution. In comparative examinations—and it is chiefly in this manner that estimations are made—this is of no consequence, as the loss may be determined when making the standard solution. Even with simple water the indications are not altogether reliable, and a certain allowance must be made, as the precipitate is not absolutely insoluble in water without the tannin is in considerable excess.

Fluorescence of the Acid Residue from the Manufacture of Ether.

Those who are practically acquainted with the preparation of ether may have noticed the extraordinary fluorescent appearance of the sulphuric acid remaining at the close of the process. I am not, however, aware that this property has ever been noted in any of the journals, and to those engaged in researches on fluorescence the fact may be of interest.

The alkaline tincture of the root of *Gelsemium sempervirens;* solutions of chlorophyll, sulphate of quinine, asphaltum, or esculin; oil of peppermint treated after Fluckiger's method; various petroleum products, or other liquids in which fluorescence is very strongly marked, do not compare in intensity with the ether residue.

Viewed by reflected light, the liquid is of a deep green color, and appears to be perfectly opaque; by transmitted light it is brownish red. The degree of fluorescence is influenced by the purity of the alcohol which has been treated by the acid; the intensity increasing with the impurities present. Methyl compounds, especially, have an intensifying effect.

Cement for Affixing Labels to Tin or other Metallic Substances.

Of the various formulæ which have been published, none have given such satisfactory results as that in which tragacanth mucilage is mixed with honey. Paste of this kind has, however, two disadvantages—tardiness in drying, and susceptibility to damp. I have

*Can. Pharm. Jour., vii. 229.

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found that by incorporating or triturating with the mixture a considerable proportion of dry wheaten flour, these disadvantages are very much reduced, and the adhesiveness and permanent tenacity of the film are perceptibly improved. I think that those who try this plan will have every reason to be satisfied with it. The following proportions may be used:—

Tragacanth Mucilage	10 parts.
Honey	10 parts.
Flour	1 part.

A cement possessing better damp-resisting properties, but having the disadvantage of not being permanently adhesive where the surface of the metal is at all greasy, and also being objectionable on account of its dark color and liability to disfigure the label, is formed by boiling together, until solution is effected, 2 parts of shellac, 1 of borax, and sixteen of water. Shellac dissolved in alcohol will produce a cement having perfect damp-resisting properties, but the film is very apt to separate from a polished surface. Flour paste, to which a certain proportion of sulphuric acid has been added, makes a lasting paste, but the acid often acts on the metal—especially if exposed to damp—and unsightly stains are produced, which penetrate the label. This paste cannot be used for ordinary colored papers, or with some colored inks. Mixtures of flour paste with molasses, syrups, or honey, have been recommended, but are never reliable.

SPRUP OF WILD CHERRY.*

BY CHARLES G. POLK, M.D.

The interest recently bestowed on this old and valued syrup by pharmaceutical investigators indicates that perfect satisfaction in the method of preparing it has not yet been attained, therefore a recital of my experience may be regarded as not an unwelcome intrusion.

I had scarcely crossed the Esculapian threshold ere I recognized the therapeutical value of Wild Cherry Bark, and also became dissatisfied with the officinal modes of preparing both the fluid

*From the Druggists' Circular.

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extract and syrup, neither, alone, seeming to represent the qualities obtained by the officinal cold infusion.

In the old fluid extract the cyanhydric acid was dissipated, and the attempt to restore it by the emulsion of almonds proved to be only adopting a quite unsatisfactory substitute for that developed by the emulsine and amygdaline afforded by the bark, and in the present officinal formula no effort is made to resupply it; so neither formula reaches my wishes, and I regard a satisfactory fluid extract of Wild Cherry a desideratum to be yet attained.

With the syrup our success has been better. The solvent power of glycerine enables us to secure much richer percolates than was afforded when water was used as the only menstruum. But even with glycerine the coarse powder usually employed is very seldom, if ever, entirely exhausted of its medicinal constituents, and in consequence the syrup does not represent full officinal strength. To obviate the difficulties besetting this preparation, I sought a remedy in a fine powder, one about No. 60 seeming to come the nearest to my wishes. This I packed tightly in a large glass funnel, without moistening (a favorite idea of mine with many preparations), and then poured one-half of the water gradually on a paper diaphragm to prevent disturbing the powder, closed the funnel, and set it aside for forty-eight hours; then removed the plug from the lower opening, and permitted the percolate to drop slowly until it had passed, and set this portion aside; added the glycerine, sugar, and the remainder of the water, and continued the process until the entire amount was obtained. I also set this aside, waited four days, and mixed the two solutions together. Experience has taught me that I obtained a syrup much richer in cyanhydric acid, and of a darker color, by this delay, than I did when the sugar and glycerine were at once added to the entire percolate;—reason—these prevent the reaction between the emulsine and amygdaline. I find a temperature of at last 86° required to give the best result, and it is also important to exclude both light and air from the first portion of the percolate, these rapidly decomposing the cyanhydric acid. I also consider the idea advanced by Mr. Rother, that the presence of tannic acid, which is quite abundant in the percolate, prevents the disruption of the amygdaline by emulsine, is not sustained by experience, or at least mine is at variance with that conclusion.

The precipitate, which appears in a few days, may depend in some degree upon the unfriendly relation of the emulsine and tannin, which the presence of sugar promptly removes, as the turbidness found in the first percolate soon disappears after its admixture with the last, and forms a clear, rich syrup, quite superior to that made in the officinal manner. By my method the atmospheric exposure incident to maceration, before packing in a percolator, is avoided,

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the capillary attraction is allowed full force, and the first portion of the percolate will represent nearly ounce for ounce of the menstruum, and will nearly exhaust the powder of all the principles water will extract.

The glycerine and syrupy menstruum secures the bitter tonic principles that water fails to take up, and thus insures complete exhaustion of the bark.

Therapeutically, I find the above method gives better results than when made by other methods. In no class of cases is this more marked than in those of consumption, with night-sweats, hectic fever, troublesome coughs, and marked debility. The percolation of the sugar through powdered bark seems to extract a tonic principle not liberated by glycerine.

Philadelphia, Pa.

NOTES ON SOME NORTH AMERICAN DRUGS. *

BY JOHN M. MAISCH.

Cranesbill appears to be used very extensively in some sections of the country, while in others it is comparatively unknown—at least as a domestic remedy. In July, 1872, I received a plant from the region of the Blue Ridge in the State of Virginia, which proved to be *Geranium maculatum*, Lin. The letter accompanying it stated that *it* (whether the rhizome alone or the entire plant, was not mentioned) has a great celebrity there as a cure for dysentery, diarrhœa and all kinds of bowel complaints. It seems probable, however, that the herbaceous portion of the plant is not employed for the purposes mentioned, since it has merely a faintly bitter taste and is nearly devoid of astringency.

Antidote to Snake Poison.—In August last the root and radical leaves of a plant were received from Mr. T. D. Reed, of Meridan, Miss., which, the letter stated, " is said to be a specific for snake-bite, and, in fact, the country people used no other antidote in cases of snake-bite." Unfortunately, the letter gives no information whatever in regard to the part employed for the purposes stated, or to the manner in which it is used. The plants sent contain neither stem nor flowers, but from the black colour of the dried plants and the character of the leaves, were at once referred to the genus *Gerardia*, and by comparison with herbarium specimens were recognized as *Gerardia* (Dasystoma, Benth.) *quercifolia*, Pursh. It belongs to the subgenus Dasystoma, which comprises perennial plants with rather large yellow flowers, with the leaves, particularly the

* From the American Jour. of Pharm. March 1874.

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lower ones, more or less pinnatifid or cut toothed, and opposite on the stem, the floral leaves being often alternate; it is very difficult to preserve the green color of the plants, all the species readily turning black on drying. The genus belongs to the order of *Scrophulariaceæ*.

The species in question resembles and is closely allied to *Ger. flava*, Lin., and *integrifolia*, Gray, and is distinguished from both by the plant being smooth and glaucous, the lower leaves being usually twice pinnatifid, and by the peduncles attaining about the length of the calyx, they being shorter in the other two species named.

Most probably the subterraneous portion is the part employed, and it is not unlikely that, like every other so-called snake roots, the black colour which it assumes on drying may have first attracted attention to it for the purpose named. It consists of a short and rather thin upright rhizome, sending off from eight to ten rootlets, which are about six inches or more in length, nearly simple, when dry slightly furrowed longitudinally and readily breaking transversely. The fracture is even, somewhat granular, exhibits a thick cortical portion of a dark gray colour, surrounding a thin ligneous centre, of a yellowish colour and a rather irregular shape. As far as can be judged from the taste, the root probably contains a principle analogous to saponin.

Verbena bracteosa, Mich.—Branches of this plant were received last August from Mr. Buntin, of Terre Haute, Ind., who states that it is used there by physicians in the form of infusion, with marked success, in the treatment of scrofulous affections, particularly in scrofulous sore eyes, and that its alternative properties are claimed by some to be more potent than those of iodide of potassium. The plant is abundant in the neighbourhood of Terre Haute, and the specimen received agrees in every respect with the specimens in the College herbarium coming from Kentucky.

The plant is procumbent and widely spreading, with its stems branching to the length of from twelve to eighteen inches. It is covered with spreading whitish hairs, the leaves are narrowed at the base into a short petiole, broadly lanceolate in outline, deeply cut-toothed, or the lower pinnatifid and the teeth rather acute. The small blue or purplish flowers are collected in dense spikes terminating the branches, the numerous bracts being longer than the flowers, lance-linear in shape or the lower deeply three-cleft. Its hoariness and its dense long bracted and squarrous spikes are quite characteristic for this species, which possess a gradually developed but lasting bitterness.

I have not been informed of the strength or dose in which the infusion is given. The plant appears to merit some attention, particularly with the view of isolating the bitter principle and determining its value as an alternative.

California Opium.—I have received from Mr. J. H. Flint, of

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Marysville, Cal., a handsome specimen of opium, in regard to which the following information was given :

" The opium was raised in Sutter county on the Sacramento River, about fifteen miles from this city. The expense attending the cultivation of the poppy, and the collection of opium, does not warrant the outlay of sufficient capital to produce large quantities, although the soil and climate are admirably adapted to that purpose. I obtained 7¾ per cent. of morphia from a specimen *recently collected*. It yielded 52 per cent. of soluble matter to boiling water, and lost 17 per cent. of moisture after drying at 212° F. What I have used seems to answer quite as well as the imported article."

From this statement it appears that the opium was assayed in its crude undried state ; if an allowance is made for the 17 per cent. of moisture, Mr. Flint's assay would give (100—17) : 100 : 7·75 : 9·34 per cent. morphia in dry opium, or nearly the strength of opium as directed by the pharmacopœia. The high price of labour in California, it may be supposed, renders the cultivation of the poppy solely for the production of opium unprofitable ; but the seeds contain a large percentage of a bland fixed oil, and after its expression are valuable as feed for cattle ; poppy culture may, therefore, notwithstanding the drawback of high wages, not prove unprofitable.

The opium received was more homogeneous in texture than Smyrna opium, of a good strong narcotic odor, and unexceptionable in its physical properties.

Oregon Balsam of Fir.—Under this name an oleo-resin has appeared in our commerce during the last year, which is rather suspicious in appearance. As far as could be ascertained, it comes from New York, and the writer has not been able to trace it beyond that city. It is a thick liquid, perfectly transparent, of a bright brownish colour and a distinct terebinthinate and aromatic odor. On rubing a little of it between the fingers, different odors become quite evident, the last one remaining being that of nutmegs. It has the appearance of being merely a solution of common rosin in oil of turpentine flavored perhaps with a little of the oil of *Eucalyptus globulus* and a somewhat larger quantity of the volatile oil of nutmegs. Is such an article known on our Pacific coast, and if so, what is its source and how is it obtained ?

Adulterated Serpentaria.—Recently a rhizome with its rootlets was handed to me, with the statement that several bundles of it had been found in a bale of serpentaria obtained from a Western State. The adulteration was promptly recognized as the underground portion of *Cypripedium pubescens*, Lin. (not *C. parviflorum*)*. This differs so considerably from *Aristolochia serpentaria* and *reticulata*, that the former can never be mistaken for the latter, and the adulteration can therefore be practised successfully only when Virginia

* For a description of these rhizomes refer to Amer. Jour. of Pharm. 1872, p. 297.

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snake root is sold in bulk. The rhizome of the latter is quite thin, rarely exceeding one-tenth inch in diameter, the remnants of the over-ground stems are invariably projecting as short branches from the rhizome, which terminate by a scarcely concave scar. The rhizome of Cypripedium is much coarser, the stems die off to the rhizome, leaving large deeply cup-shaped scars, the older ones penetrating deeply into the rhizome. Cypripedium, moreover, is a monocotyledonous plant, while serpentaria is dicotyledonous and the difference in the characteristic disposition of the lignous bundles is quite evident.

UNOFFICINAL FORMULAS.

REPORTED BY J. F. HANCOCK.

(*Continued from page* 280.)

ELIXIR PYROPHOSPHATE OF IRON, QUINIA, AND STRYCHNIA.

(C. Lewis Diehl's Formula.)

He says: "This requires particular manipulation, which precludes the use of simple elixirs.

"The following formula, the result of concert experiments of my friend, Mr. E. Scheffer, and myself, has been used by me since autumn, 1869, and I can recommend it as uniformly successful, when the manipulations are carefully conducted :—

"Take of Sulphate of Quinia	60 grains.
Strychnia	1 grain.
Citric Acid	5 grains.
Stronger Alcohol	3 fluid ounces.
Spirit of Orange	80 minims.
Syrup	6 fluid ounces.
Pyrophosphate of Iron	½ troy ounce.
Distilled Water	7 fluid ounces.
Water of Ammonia	suff. quantity.

"Triturate the sulphate of quinia, strychnia, and citric acid together, until minutely divided, then add the alcohol and spirit of orange. Warm the syrup slightly (to 150° F.), and add to the turbid mixture, when, upon stirring, the mixture becomes clear. To this add the pyrophosphate of iron, previously dissolved in the distilled water, and finally, carefully add water of ammonia, drop by drop, until the elixir is perfectly neutral to test-paper; filter. The finished preparation has a greenish-yellow color, a pleasant flavor of orange, and is permanent."

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BITTER WINE OF IRON.

(James T. Shinn's Formula, slightly modified).

We have had several years' experience with the following formula, and it has given entire satisfaction to prescriber, dispenser, and consumer.

Take of Sulphate of Cinchonia	45 grains.
Sulphate of Quinia	15 grains.
Citric Acid	60 grains.
Citrate of Iron, *soluble*	240 grains.
Concentrated Tinct. Fresh Sweet Orange-peel	3 fluid ounces.
Distilled Water	3 fluid ounces.
Sherry Wine	8 fluid ounces.
Syrup	2 fluid ounces.

Dissolve the sulphates and citric acid in two ounces of the water, and the iron in the remaining ounce of water: mix the two solutions, and add the other ingredients, previously well mixed together.

The only change from the original formula is in the kind and quantity of orange flavor, for which we claim an improvement. See *Proceedings of American Pharmaceutical Association*, 1864, p. 234.

ELIXIR OF GENTIAN WITH IRON.

Take of Extract of Gentian	128 grains.
Citrate of Iron, *soluble*	128 grains.
Distilled Water	1 fluid ounce.
Simple Elixir	15 fluid ounces.

Dissolve the extract and iron in the water, *warmed*, and add the simple elixir: filter.

ELIXIR OF BROMIDE OF POTASSIUM.

Take of Bromide of Potassium	640 grains.
Red Elixir	16 fluid ounces.

Mix.

This contains five grains of salt in each fluidrachm, and is given as a type. The red elixir does not seem to answer for the elixir bromide of calcium; caramel is a more suitable coloring substance for the calcium elixir. We prefer the simple elixir in this case, and to use no coloring substance.

SYRUP OF LICORICE ROOT.

Take of select Licorice Root in moderately coarse powder	4 troy ounces.
Diluted Alcohol	sufficient quantity.
Sugar	12 troy ounces.

Moisten and pack in a conical percolator; macerate for twelve hours, percolate to exhaustion. Place the tincture over a water-bath until reduced to ten fluid ounces, filter, and then add the sugar; lastly, sufficient distilled water to make sixteen fluid ounces of finished syrup.

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The syrup of licorice root, when carefully prepared, is more effectual and more convenient for masking the bitterness of quinia than is the very popular "compound elixir of taraxacum," and being free from the stimulating influence of alcohol, which is present in the elixir, is well adapted for children. The proper proportions will be one grain of quinia (any salt of it) to the fluidrachm, and if those for whom quinia is ordered will take the precaution to chew a small quantity of licorice root, previous to taking the quinia mixed with the syrup of licorice, in the proportions here recommended, scarcely any bitterness will be observed. As a matter of course, acids mixed with quinia and licorice syrup, will immediately develop the bitter taste.

It has of late become fashionable to use glycerine as an antiseptic and solvent in elixirs, as well as other compounds of pharmacy, but our aversion to the general use of glycerine for internal administration, for various reasons, has prevented its introduction in our formulas.

The results of our investigations of liquid pepsin preparations will not warrant the introduction of more than the one formula, which is really a wine of pepsin, and has been found useful in many cases.

SYRUP OF WILD CHERRY BARK.*

BY G. B. THOMPSON, OF BUFFALO, N.Y.

It being desirable to produce from the wild-cherry bark a pleasant and reliable preparation at a reasonable price, and feeling that it would be appreciated by many of the readers of your valuable and instructive journal, I propose to give you what has, in my judgment, proved a very good formulæ for making a syrup which costs less than many of the preparations in the market, and has given good and satisfactory results not only as a tonic, but also as a sedative. I have experimented considerably in the use of glycerine, not only as a preservative, but also as a solvent of the active principles of the wild-cherry bark, and am thoroughly convinced of its efficiency. I find that, with a little care, a syrup even superior to many of the fluid extracts, and much superior to the syrups in the market, can be produced by using the following formula:—

Wild-cherry bark, moderately fine	10 troy oz.
Glycerine	4 fluid ozs.
Crushed Sugar	56 troy ozs.
Cold water, 60° F., sufficient.	

*From the Druggists' Circular, Jan., 1874.

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Mix the glycerine with twelve ounces of the water, and with this liquid moisten the powdered bark carefully, so that the particles will not adhere. Pack the moistened powder in a glass percolator, taking care to have the lower opening of the percolator previously corked. Then pour upon the powder the balance of the menstruum, cover, and let stand from twelve to twenty-four hours; then remove the cork, and proceed with percolation, adding enough cold water to obtain two pints of percolate. To this, transferred to a wide-mouth bottle of sufficient capacity to admit of shaking, add the sugar and shake occasionally until the sugar is dissolved, taking care not to use any heat during the process, to have the temperature as previously stated, and to keep bottle tightly corked all the time.

MANUFACTURE OF PARAFFIN IN THE UNITED STATES.

At a recent meeting of the Philadelphia College of Pharmacy, Dr. A. W. Miller read a paper, reported in the *American Journal of Pharmacy*, relating to the manufacture of several petroleum products, and, amongst others paraffin. This is extensively prepared in the neighborhood of Philadelphia. The method of manufacture is thus described: "The process begins by subjecting the so-called residuum of the coal oil refiners to distillation in large stills, made of five-eights inch boiler iron, having a capacity of about 1500 to 2500 gallons. Direct heat is applied immediately beneath the stills, the bottoms of which toward the end of the process reach a white heat, The distillate is condensed in a system of iron pipes, which are contained in large wooden tanks. Distillation begins at 220°, and is terminated at about 570°. The product is a thick, unctuous mass at ordinary temperatures, but it liquefies at about 100°, or a little over. It has the peculiar iridescent color and the characteristic odor of petroleum. The residue of the distillation is a hard, porous, black mass, which is free from odor and presents a close analogy to the ordinary coke of the gas works. In the yards referred to, it is in fact called coke, and is used as fuel to heat the stills.

The distillate, which has thus been obtained, is next treated with from four to five per centum of sulphuric acid, to *kill the green*, as it is termed by the workmen. After the removal of the acid by carbonate of sodium, the oily mass is introduced into bags, made of the material called duck, each of which holds about three or four gallons. A number of these are then placed horizontally in an ordinary screw press, being superimposed on each other and separated by intervening boards. During the summer, it is necessary to use ice in order to lower the temperature and prevent too much loss of paraffin.

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The oil expressed during this process has the gravity of 25° ; it is known as heavy paraffin oil, and is an excellent lubricator for cylinders. It can be readily deodorized and also freed from unpleasant taste, so that it may represent the softer variety of the so-called cosmoline.

The crude paraffin, when taken from the presses, is melted and run into moulds. It is now of a light yellowish or straw color, rather soft, and still strongly redolent of petroleum. In this state it is sold to the refiners, who further purify it, in order to adapt it to the multitudinous purposes to which modern industry applies this valuable inheritance of prehistoric ages.

The refiners subject the crude article, which they designate as *wax*, to powerful hydraulic pressure, and thus obtain therefrom a second variety of paraffin oil of about 28° gravity. This is also used almost exclusively as a lubricator. The residue is further purified by treating it with a variety of gasolin or benzin of definite density, which is specially prepared for this purpose. Steam is also called into requisition in order to completely deodorize the product.

Two varieties of pure, white paraffin are manufactured, namely, the ordinary hard article having an apparently crystalline structure, and another having a softer and more gelatinous consistence, which is termed *gum stock*, and is chiefly consumed for chewing-gum. Some of the refiners consider these two products as separate and distinct bodies, and state that they cannot convert either of them into the other. One single refining establishment in this city is reported to find a market for an average production of these substances to the extent of 10,000 lbs. per month.

Among the more important applications of paraffin in our neighborhood may be enumerated its use for laundry purposes; when added to starch, it imparts to it an additional lustre in the same manner as spermaceti or white wax. It has been found to be an effective preservative of wood, and large quantities are consumed in this industry. Chewing-gum, as has been already stated, is the softer variety of paraffin ; although this is apparently a very trivial and non-important article, it is in reality sold in enormous amounts by many of the wholesale confectioners. The manufacturers of friction matches are heavy purchasers of paraffin, which they used for impregnating the sticks, so that they will more readily ignite, and burn with greater uniformity. Of late, paraffin is also beginning to be used extensively for the purpose of sizing various textile fabrics. Paraffin or ozokerite candles are well known, and they are confidently asserted to produce a finer light than any other variety. Confectioners also use paraffin to impart a gloss or lustre to some of their bon-bons, such as cream chocolate drops and others.

In Europe, paraffin has in addition been used for water-proofing various woven goods, for coating the interior of wine and beer barrels, for the preservation of fresco paintings, for the purpose of

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saturating cork and paper, as a sizing or finish for leather and small articles turned from wood and bone, as a preservative of fruits and for many other similar applications."

THE ROSE HARVEST IN ADRIANOPLE.*

The following report on the Rose Harvest for 1873 in the vilayet of Adriánople has been received from Mr. Vice-Consul Dupuis :—

Although the rose harvest in this province does not take place at any precise period, still, it is generally expected to commence early tn the month of April; but, owing to wet weather and a cloudy spring, this year harvesting operations did not begin till near the end of May. It is also to be remarked that a high temperature in April will cause the rose-buds to develop early, chilly weather retarding the blossoming of the flowers until milder and softer weather sets in.

In cloudy or wet seasons the rose plants blow gradually, and harvesting lasts about a month, when the gathering of the flowers is rendered easy, and operations of distillation are conducted with care and attention; whereas when the weather is dry, only half that time is occupied, and distillation is more rapidly proceeded with. The advantage of a damp season over a dry one consists in a greater yield of oil in the former, when about 8 to 9 okes or 22 to 24 lbs. of the blossoms are required to produce one miscal or 1½ drachm, whilst in the latter 14 to 16 okes or 38 to 44 lbs. of the flowers will barely suffice to produce the same quantity.

In low and sheltered localities the rose tree comes to perfection sooner than in high lands, owing to the greater power of the sun than in elevated positions, where harvesting is naturally more backward.

The harvest this year has, on the whole, been more remunerative to cultivators, and the crop, it is said, will yield in quantity some 500,000 miscals, or about 93,750 ounces of otto or attar of rose, and is valued at about £70,000; but as the weather throughout last spring was moist, distillation was profuse, consequently it is less strong than last year's produce. The best quality of otto varies in price from 17 to 18 piastres the miscal, or from 15s. 4d. to 16s. 10d. per ounce; whilst inferior qualites realize from 14 to 15 piastres the miscal, or 13s. 1d. to 14s. the ounce.

The mode adopted for testing the purity of the different qualities of these oils is to put the essence into flasks, which are afterwards immersed in water at a temperature of 63° to 68° F., when if the quality be good it will freeze; this oil is preferred to all others as being of the purest kind. These oils will also greatly differ in quality,

*Phar. Jour. & Trans.

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according to the nature of the soil. A stony, sandy ground, impregnated with oxide of iron, is said to favour the growth of the plant, and produces oil of the very best quality; while hard, unmixed land will only yield oil of an inferior kind, which will not freeze at 52° F.

Manufacturers also frequently adulterate these oils by an admixture of a substance likewise produced by them from certain kinds of grasses.

Otto of rose is mostly exported to Germany, and buyers and agents from that country annually resort to this province, and make extensive purchases for firms to the amount of upwards of 61,800 ounces, the remainder finding ready markets in the East and Constantinople.

The principal localities where this valuable article is manufactured are in the districts of Kizanlik, Karlowo, Kalofer, Eski-Saara, Jeni-Saara, Tschirpan, and Philipopoli, on the southern slopes of the Balkan mountains, the first-named places being chiefly renowned for their extensive plantations of roses of the most esteemed varieties, viz., the damask rose, sempervirens, and musk rose.

JAPANESE TEA.*

The best tea is produced in the province of Yamashiro. At Ogura, in that province, there are trees from 400 to 500 years old, producing tea worth five dollars per pound. The hedges in the lanes and round the kitchen-gardens in the villages are generally tea shrubs. The production of tea in Japan in 1871 is estimated at about 36,000,000 lbs., about half the quantity being consumed in that country and about half exported. It is thought that an increase of about 15 per cent. per annum may be counted on for some years. The Consuls (British) describe the method of preparing the tea. The leaves are steamed, then rolled on mats or rubbed between the hands, dried over a charcoal fire, and sifted; the process of drying and sifting being repeated. Great care is necessary in keeping the tea, when packed, protected from the air; if exposed, it loses both its flavor and its color. Tea from young shrubs does not remain good for more than a year; tea from old trees is at its best at the end of the first year, and remains so for eight months. The chief tea merchants of Kiôto have been getting some Chinese over, to prepare tea in the Chinese fashion; it is sold at prices varying between 10d. the kin and 8d. the kin, the kin being equivalent to 1.33 English pound avoirdupois. As is well known, China leaf finds its way to the hands of the foreign purchaser fully cured and packed and ready for exportation; but Japan leaf comes to market in a

British Trade Journal.

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comparatively raw state, requiring further firing to extract sufficient moisture to permit its exportation. There are several tea-firing establisments in Yokohama, giving employment in the height of the tea season to some 1,800 or 2,000 hands, mostly women and children, who work at a sum equal to 9½d. a day, the working day being from 7 A.M. to 5 P.M. Japan teas, fine, finest and choice, rank with fine to finest China Moyune greens; medium to good medium, with good to fine Foochow or Amoy Oolongs; and low medium with good cargo Oolongs. Japan tea finds very little sale in the English market; most of it goes to the United States or Canada. Acting Vice-Consul Wilkinson (Hiogo) explains that the taste for teas differs in America and in England. In America the prevailing taste is for green or uncolored teas, while in England it is for black teas, and it has been found easier and more profitable to prepare Japan teas than the former. The difference depends partly on the original quality of the leaf and partly on the preparation. In the preparation of black tea the leaf is taken when fresh, and after it is picked it is wetted and put into baskets, where it is allowed slightly to ferment; but the Japanese have not yet adopted this method, and it is thought it would not be remunerative. There is a want of body in the Japan tea, and lower grades would not compete successfully with the corresponding grades of Chinese tea; the latter can be produced more cheaply, and gives a liquor more suitable to English tastes. In the original quality of the leaf, too, Japan teas are more suitable for green teas. There is a difference also between black and green teas in the manner of firing. Black teas are fired in baskets; but the bluish green color of the leaf which is preferred in America, is best produced by firing in iron pans. Japan teas are not, as a rule, colored with any pigment. In the preparation of China green tea there is a mixture used of gypsum and Prussian blue, or indigo, giving a glazed slate color. In Nagasaki an imitation of China green tea is prepared and exported under the names of gunpowder, hyson, young hyson, and Twankay. These are colored in this manner, but nearly all the tea that goes from Yokohama or Hiogo is uncolored—that is the only coloring it receives is from the action of the heat and the metal pans. In order to produce the color by this means, the tea is very highly fired. This gives the liquor drawn from it what teamen call a "biscuity" flavor, which is liked in America, but which is not liked in England so well as the more mellow flavor which teas have when not so highly fired. Tea is not improved by high firing, except that it will keep longer without deteriorating, and this no doubt is an advantage in the eyes of dealers. But in the process of firing it loses more, and as the leaf is rendered more brittle there is a larger proportion of dust. In basket-firing tea will lose from 3 to 5 per cent.; if fired in pans it will lose 9 per cent. The color of the liquor which Japanese uncolored tea draws is like that which is drawn by fine Oolongs—a pale

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olive; but it is not so bright as that drawn by the finest grades of China green teas. Great importance is attached to the color of the liquor, as it is a rule that the finer the grade of the tea the paler is the liquor it draws. In ordinary China black teas the flavor of the liquor is considered much more than the color, which is generally reddish. It should not, however, be muddy, as that indicates that it has been adulterated. Japan tea is packed in half-chest boxes, the average weight being about 46 lbs. The lower the grade of the tea the lighter it weighs; a box which will contain 55 lbs. of the choicest tea will have only 44 lbs. of the common grade. In some districts of Japan there has been great carelessness shown in the matter of picking; owing to the anxiety of buyers to hurry forward purchases, the natives were unable to devote the usual time to the preparation of the leaf. This carelessness, if continued, must eventually lead to loss.

MODE OF ACTION OF CHLORAL

According to some recent experiments made by M. Gubler, a French scientist, and reported in the *Journal de Pharmacie*, chloral does not act, as hitherto been taught, by the development of chloroform in the blood, but by its direct action as chloral. The effects of chloroform are mainly and primarily anæsthetic, while those of chloral are soporific, and not anæsthetic, except secondarily, when the function of the heart is dangerously depressed. M. Gubler describes the toxic effects of chloral as acute and chronic. The acute are vomiting, vertigo, prostration, stupor, coma, convulsions, and sometimes death from paralysis of the herat. Chronic chloralism is characterized by accidents analogous to those of ergotism, that is to say, by hyperæthesia, general malaise, desquamation of the epidermis of the fingers, superficial ulcerations about the nails, anasarca, albuminuria, feeblenness of the heart and embarrassment of respiration. These accidents often terminate in death. Such dangerous consequences may be avoided by not giving the chloral for too long a period of time. In either kind of poisoning, the toxic effects are to be combated by calefaction, olfaction of stimulating odors, artificial respiration, and inhalation of oxygen.—*Druggist's Circular.*

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THE SPHERE OF MODERN PHARMACY.

The following extract is taken from the report of a lecture—kindly furnished by the author—Dr. Frederick Hoffmann, of New York. The lecture was delivered before the College of Pharmacy of that city, and is very interesting throughout. Our space will not admit of a lengthy extract, but the following remarks, though merely forming an introduction to the lecture are so appropriate to the times that we give them entire :—

" It is a well known fact that the achievements of the physical sciences, and their practical application to the pursuits of industry and commerce, have caused remarkable changes in many branches of the arts and trades, and that they also have exerted a considerable influence upon the scope and drift of the drug trade and of pharmacy. The pharmaceutical laboratory of yore has gradually passed away, and in its stead the establishments of the manufacturing chemists have risen to supply the medicinal chemicals and most of the pharmaceutical preparations ; the pharmaceutist is not any more a manufacturer but mainly a dispenser, the responsiblity only for everything that he dispenses is left to his share, and consequently the duty of critical scrutiny and discrimination of the preparations of the chemical manufacturer, and of the products of nature as supplied by the commerce in drugs.

These gradual changes in the sphere of his occupation have naturally exercised a correspondent alteration in the practical and scientific requirements of the pharmaceutist. Although one of the most interesting parts of his former practice has been taken out of his hands, the pharmaceutist has not lost ground in the compass of his attainments ; it is the critical exercise of knowledge and skill in the direction of scrutiny and discrimination which forms the pre-eminent requisites of the modern pharmaceutist, and which extends his professional qualification and efficiency ; or, in other words, it is nowadays of less importance to the pharmaceutist to acquire a practical skill of manufacturing medicinal chemicals, or to know exactly the therapeutical action of drugs, than to have a precise knowledge of their characteristic properties and the ability of ascertaining their identity and qualities.

This change in the pursuit of the pharmaceutist is also evident in pharmaceutical literature. The number of treatises on chemical, as well as on pharmacognostical and microscopical examinations, increase from year to year ; while those treating of the methods of manufacture lose in ratio and pre-eminence. Moreover, the most advanced pharmacopœias of the present day have ceased to describe or to prescribe the methods of preparing medicinal chemicals and confine themselves to concise descriptions of the characteristics of medicinal substances, and of the modes of establishing their identity and ascertaining by approved tests their quality and purity.

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The consequence of these changes in the province and drift of pharmacy is the obvious fact that analytical chemistry and pharmacognosy, and the application of the microscope, have taken a foremost rank among the necessary attainments of the pharmaceutist, and have also largely engaged the interests of the druggist, so that the test-tube and the microscope are becoming more and more indispensable implements in every well conducted pharmacy and druggist's establishment.

While chemical analysis is particularly adapted to the examination of the products of chemical industry, and to the estimation of the value of the drugs, the microscope renders great service in the investigation and identification of all organized substances. We ascertain by chemical tests the value of cinchona barks, of opium, of nux vomica; they furnish a sure evidence of the presence and the proportion of the alkaloids in those drugs, and of organic acids, of sugar and the various vegetable principles in other drugs, but they fail to disclose their nature and structure. Now it is precisely in this branch of investigation that the microscope affords much aid, and the advantage of prompt application and speedy results; it discloses at once the anatomical structure of a drug, the peculiarity of any kind of starch, and thereby the plant from which it was derived; it indicates directly if the bark which is offered to the manufacturer of quinine is really cinchona bark, and, consequently, if it is worth the trouble of a chemical assay for the percentage of alkaloids. It decides promptly the derivation and genuineness of sarsaparilla, of ipecac, of jalap, and of most barks, roots and vegetable drugs, and the quality of all those powdered substances which are liable to adulteration with starchy flours. The microscope, therefore, is an invaluable aid in their examination and in the discovery of adulterations, and, as indicated with the cinchona barks, it may also frequently be made to serve as an auxiliary to chemical researches. While chemicals are always uniform and the same in composition and properties, many of the crude drugs greatly vary not only in appearance and form, but also in their qualities, resulting from their derivation, from the modes of their gathering and preparation for preservation, and other natural or incidental causes.

These few remarks will be sufficient to introduce to you the true significance and the value of the microscope; they will at the same time indicate the important influence which this instrument has exercised upon the progress of pharmaceutical materia medica, and to what an extent it has contributed to a better knowledge of crude drugs and to correcter methods in their discrimination. The more or less vague, empirical criteria of mere external appearances, in their recognition and estimation, have lost ground by the microscopical methods of investigation, and in their stead the nature and relation of the internal structure and constitution have furnished a rational and scientific foundation for the classification of drugs and

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for the science of pharmacognosy, which stands to materia medica about in the same relation that chemical analysis bears to general chemistry.

OZONE—A NEW AND CORRECT METHOD OF SUPPLY*.

The use of ozone as a disinfectant in hospital wards and public buildings has amply demonstrated its virtue as a purifier of air exhausted by breathing or poisoned with emanations from corrupt or decaying organic matter. The only bar to its more extended use has been the lack of a simple and trustworthy means of generating it, safely and continuously, by a process not involving scientific skill or costly materials.

The latest means suggested certainly bears the palm for simplicity, cheapness, and accessibility to all. It consists simply in the exposure to atmospheric action of common phosphorus matches moistened by water, the alleged result being the production of nitrite of ammonia and ozone—both active purifiers of air.

Knowing the efficiency of moistened phosphorus as a generator of ozone, the author of the match method, Mr. Sigismund Beer, of this city, set out one day to procure a quantity of that substance to use in sweetening the atmosphere of a room whose musty smell had successfully resisted the power of ordinary disinfectants. Failing to find any phosphorus at the drug stores in his neighbourhood, it occurred to Mr. Beer that possibly lucifer matches might furnish the needed element in a condition suited to his purpose. He tried them, dipping them into warm water for a few moments, then suspending them in the obnoxious room. Their effect was prompt and salutary; and thereafter, by continuing their use, he was able to enjoy "the luxury of pure and refreshing air," notwithstanding the room was in the basement of an old cellarless house on made land, the air of which was further tainted by a quantity of mouldy books and papers. In a paper lately read before the Polytechnic branch of the American Institute, Mr. Beer narrates a number of subsequent experiments with the same simple materials, the success of which convinced him that he had made a veritable discovery of great importance.

Touching the safety of the method he proposes, Mr. Beer is confident that no overcharging of the air with ozone or other injurious matter may be apprehended from the use of matches in the manner he describes. Both the ozone and the nitrite of ammonia are generated slowly, and their force is swiftly spent by combination with the impurities they are intended to remove. It is obvious that the supply of the purifying agents can be easily regulated by increas-

* From the Scientific American.

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ing or diminishing the number of active matches. In the room above mentioned, six bundles of matches were kept active—some near the ceiling, others near the floor—by daily watering.

In another instance a single bunch is mentioned as having sufficed for quickly purifying the air of a room in which several adults and children were lying sick, but in this case the air was fanned against the matches while they were carried about the room, thus heightening their activity. How long a match retains its ozonizing power, Mr. Beer does not say. In conclusion, Mr. Beer claims that, whatever may be said of his theory of match action, the fact is indisputable that, the use of matches as he suggests, we have a handy, wholesome, and inexpensive means of freeing our houses from noxious exhalations and the long train of evils attendant on the prevalence of bad air. The matter is easily tested and certainly well worth trying.

SUBSTITUTION OF CHICORY FOR DANDELION ROOT.

In a communication to the *Pharmacist*, Mr. C. B. Allaire remarks on the frequent substitution of chicory for dandelion, more especially in the manufacture of the solid and fluid extract of taraxacum. He says: "This article is also largely sold in pressed form for dandelion root. The reasons given for this substitution of one root for another in manufacturing, is it that yields full twice as much solid extract as the true root, and consequently a denser fluid extract. Parties offering us this root, told us that they supplied it to nearly all of the prominent manufacturers of fluid and solid extracts and that they used it for dandelion. In proof of this assertion, not one of the manufacturers mentioned to us offers an extract of chicory on their lists.

Now we do not wish to enter into the merits of chicory as a substitute for dandelion. It may be better in every respect than the drug it conterfeits.

The substitution of it is nevertheless a fraud on the profession; it is not a new idea, for the adulteration of dandelion is spoken of in nearly all works treating on the subject, but it is a custom of trade that has been allowed to grow to such an extent, that the writer firmly believes that four-fifths of the dandelion used in this country of late years is chicory. This custom has prevailed because no harm has been known by it, and because no great objection has been made to it. Here is a chance for some enthusiastic student to investigate and publish a test by which preparations of chicory, labelled dandelion, may be detected by simple means. For the benefit of persons having occasion to buy the root, I would suggest the following

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points to be observed in examining samples: Chicory generally appears much finer-looking in point of size and color, being in larger pieces and whiter; if broken up into pieces the size of a pea, they will be found irregular in size and shape, and white on all sides, while it sometimes occurs one and one half inches in diameter, and about one-fourth to one-half nch thick, showing that it is a section of a large root.

The degree of bitterness and the taste are very similar in both dandelion and chicory. The most conclusive difference will be found in the rootlets. If a rootlet be about one-fourth of an inch in diameter be broken at right angles, if of chicory, the medullary rays will be noticed plainly radiating from the pith, while of dandelion, the pith will be found surrounded with many very fine rings, so close together as to be almost invisible to the naked eye, and if the specimen be very dry, it will be noticed to have a pearly lustre, and have the appearance of a section of a clam-shell, and medullary rays are not noticeable. I hope this subject will receive the attention it demands. We are opposed to dishonest pharmacy, even if the consumer is benefited by it; but as a rule, the profit will always be found at the other end of the transaction."

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Editorial.

ADULTERATION OF WINES AND LIQUORS IN CANADA.

Many of our readers will have seen Professor Croft's report on the spirits and liquors of Canada, and we doubt not but the result stated has occasioned no little surprise. We have all been taught to believe that our spirituous beverages were of a quality but mildly described by the term indifferent. Our standard production, which, from its powers of penetration, and deadly effects has been likened to the backwoodsman's rifle, and has gained for itself the designation of "forty rod," is now demonstrated to be a liquid of the mildest and most innocuous character. It is thus officially described :— "*Canadian Whiskey*.—Color, bright yellow ; taste, good ; specific gravity of liquor, 0.9538 ; specific gravity of product, 0.9487 ; absolute alcohol per cent. 35.0 ; sulphuric acid or sulphates, trace ; solid contents per cent. 0.3. Good, and of proper strength." Here we have a liquor particularly characterized as "good," and answering to all the requirements of purity. What a consolation will a knowledge of this be to those who, while enjoying the social glass, had still a lingering suspicion that poison lurked therein. We can well imagine the triumph of the toper at seeing one of the best legs of the teetotal platform thus ruthlessly swept away. No more may the temperance lecturer dilate on the mysteries of adulteration ; his poisons are an illusion now happily dispelled by the torch of science.

While speaking thus lightly on a subject which appears to demand more serious thought, we think we are not putting the question in a false light. We sincerely believe that the published result of this Governmental examination is calculated to do a great deal of harm. Even if correct, its publication is injudicious, and though we entertain the highest opinion of Professor Croft's ability to conduct examinations of this kind and desire to pay every deference to one whom all regard with respect, we cannot forbear to state our belief that the general conclusions he arrives at are so stated as to mislead those unacquainted with the subject. For instance, we are told "that, as a general rule, the liquors of Canada are not adulterated, except by the addition of water, and the beers seldom, unless

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by the retail dealers in low groggeries, and these principally by the addition of salt."

Most persons who read the above quotation would conclude that the liquors sold in Canada are pure because unadulterated. This is, however, not a strict interpretation. The commoner grades of Canadian whiskey are loaded with amylic compounds, representing all the fusel oil produced in the process of manufacture, besides containing the more volatile products of unknown, but undoubtedly poisonous character, which pass over at the commencement of distillation. These compounds cannot be regarded in the light of adulterations, but as impurities, which the manufacturer would gladly get rid of if their separation did not entail the trouble and expense of removal, and a diminution of the product. We are well acquainted with the practical details of this manufacture, as actually carried on throughout this country, and can confidently state that the lower grades of Canadian whiskey are, generally, of this description. As, in the particulars of analysis, Professor Croft makes no mention of these amylic and etherial products, we may assume that he disregarded their presence, as adulterants, and confined his attention to substances which could be legitimately regarded in this light. In justice to the better kinds of Canadian whiskey—such as are to be found in the more respectable houses in our cities and larger towns—we would say that we believe them to furnish the purest form of alcohol existing in any beverage with which we are acquainted.

In regard to brandy it is stated :—" It is well known that brandies are often manufactured from high wines, coloring matter and the so-called oil of cognac. But these substances cannot properly be denominated poisons, and if consumers are willing to accept such compounds as pure cognac, it does not appear that the dealers can be called poisoners." That the so-called oil of cognac is not poisonous would be a matter which few persons would care to test by experiment upon themselves. What oil of cognac really is has never been very satisfactorily made out, at least in printed records. Authorities generally agree that it is pelargonic or œnanthic ether collected by repeated distillations of the lees of wine. That an oil of cognac may be so collected we do not doubt, but that such is the source we are sure is not the case. These flavouring liquids, including oil of cognac, grape, rye and rum, of which immense quan-

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tities are annually consumed, originate with a few chemical manufacturers, chiefly located in New York and Germany. The details of their manufacture are kept inviolably secret. But one thing is certain; that no product of the grape enters into their composition. As far as our experience goes they are mostly compounds of amyl with various acids; hydrocyanic acid, probably as ol. amygdalæ amaræ, enters largely into some of them. As we are, therefore, uncertain as to what oil of cognac really is, we cannot tell its properties, whether poisonous or not, without actual experiment, and this few are disposed to try.

Professor Croft is disposed to think that most of the samples of brandy he examined were genuine; that is, having their origin in the fruit of the grape. His only reason for arriving at this conclusion is that these samples exhibited no striking differences when compared with a specimen of so-called pure brandy, procured from a noted liquor dealer of Toronto. Whether such premises will warrant this conclusion, we leave our readers to determine.

In regard to port wine, the analyst very frankly says:—"It is impossible to say from chemical tests whether port wines are genuine or manufactured; a good wine-taster could give a better opinion." "There is no chemical test by which fictitious coloring matter in port can be detected." This agrees with Griffin (*Chemical Testing of Wines and Spirits*), who says: "I can give no chemical tests for these matters;" but does not correspond with the statements of some other authorities. It does not appear, however, that chemical tests are to be implicitly relied upon; but, according to Sorby (*Quarterly Journal of Microscopical Science*, vol., ix., p. 338; and *Chemical News*, Feb. 1870), the spectroscope may be employed advantageously in these examinations. The coloring matter of the grape gives no absorption bands, and thus differs from many of the substances used to give a color to fictitious port. (Phipson, *Journal of Chemical Society*, Feb. 1870). It is to be regretted that the spectroscope was not thus employed by Professor Croft, for we regard the presence of foreign coloring matter as the best possible proof of the spurious character of the wine.

There are some facts relating to the alcoholic strength of liquors which are stated in the report alluded to which may prove useful for reference. Of seven samples of brandy examined, the percentage of absolute alcohol ranged from 44.8 to 31.0 per cent.;

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of nine samples of whiskey, 39.5 to 26.9; three samples of rum, 41.0 to 38.0; five of gin, 42.5 to 23.50; four of port wine, 18.00 to 12.15; five of beer and ale, 9.0 to 3.5 per cent.

We are at present engaged in researches covering some of the ground embraced by the report, and hope next month to resume the subject.

PHARMACY IN IRELAND.

Since the year 1792, when the Apothecaries' Hall Company was created by Act of Parliament, the Irish pharmacists, or, more properly, apothecaries, have had the sole control of their own affairs. The Pharmacy Act, passed in 1868, does not apply to Ireland, but is confined to Great Britain proper; so that in pharmaceutical matters, at least, the Emerald Isle has been favored with the much-talked-of "Home Rule."

It appears, however, that the regulations of the Apothecaries' Hall are not suited for these progressive times. The diplomas which are granted not only confer on the recipient the right to compound and dispense, but also to practice medicine. The standard of qualification is, necessarily, high, and, as a consequence, the number of persons who obtain diplomas is comparatively small. Those who are successful naturally lean to the most lucrative side, and become attached to the medical profession. The result of this is, that the dearth of properly qualified dispensers of medicine is now so great as to be a source of public inconvenience. It is stated, on good authority, that there are between twenty and thirty of the most important market towns in Ireland, with populations varying from 10,000 to 50,000, where there is neither apothecary nor other person competent to dispense medicine. This is more particularly true of the counties of Tyrone, Armagh, and other large and populous districts or counties of the North.

Compared with Canada, what a pharmaceutical paradise Ireland must be! Here we have scarcely a village or hamlet without its qualified chemist; and the idea of a town having even 1,000 inhabitants, and not containing a drug store, would be too temptingly preposterous.

However, it appears that the Irish apothecaries—as repre-

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presented by the Apothecaries' Hall, and also the Chemists' and Druggists' Association—are discontented with this state of things, and have taken steps in the direction of a new arrangement. During the early part of the year, deputations from each of the above mentioned organizations waited upon the Marquis of Hartington, Chief Secretary for Ireland, and stated their grievances, asking for an alteration of the law so as to make it conformable to that in force in England. It was proposed that the Apothecaries' Hall assume a position similar to that of the Pharmaceutical Society of Great Britain, and have the power of granting certificates in pharmacy to those who might pass a suitable examination. This would be simply modifying or extending the powers of the Hall, so that it might embrace pharmacists as well as apothecaries.

The deputation appears to have been favorably received, and the Chief Secretary promised to bring the matter at once before the Medical Department of the Privy Council in London.

How the recent changes in political matters in England will ultimately affect this question we cannot say, but we presume that for the present it will have to rest in abeyance.

FATE OF THE MEDICAL BILLS.

As most of our readers will have learned, the amendments to the Medical Act received the sanction of the Legislature, while the Homœopathic Bill was thrown out at its first reading. There is much discontent on both sides, and it is questionable whether the matter will rest here. To judge by the correspondence with which the daily papers have been crowded, the medical profession is, of all others, the most insatiable in its demands, and the most difficult to satisfy.

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Editorial Summary.

Glycerate of Sucrate of Lime, and its Employment as an Application to Burns, &c.—M. Latour (*Repert. de Pharm.*) gives some interesting details regarding the preparation of sucrate of lime, and also of a solution of that substance in glycerin. The latter preparation, when mixed with oil, has been highly recommended as an application to severe burns, erythema, erysipelas, variolic eruptions, chilblains, and other cases where the skin is the seat of more or less inflammatory action. In the treatment of burns, the liniment has been extensively tested, and has been found to work very satisfactorily. It efficaciously protects the injured surface from contact with air; does not adhere to the wound; modifies the suppuration, and controls the cicatrization. Its application is not attended with pain. In the preparation of the glycerin solution of sucrate of lime, it is not essential to have recourse to the dry sucrate. A nearly saturated solution may be obtained by adopting the following formula:—Slaked lime 2 parts, powdered sugar 4 parts, water 20 parts, glycerin 4 parts. Mix the sugar and lime thoroughly in a mortar; add the water in small portions, so as to obtain a clear pulp without lumps. Put the mixture into a stoppered flask. After contact for twenty-four hours, filter, and add the glycerin to the solution, then evaporate until it is reduced to one litre. It is essential not to add the glycerin until after the filtration of the solution of sucrate of lime or the filtration will be retarded. Applied to the skin, this glycerate of sucrate of lime forms a kind of varnish, which, under the influence of transpiration, is detached in the form of lumps; upon inflamed surfaces it produces a feeling of coolness and comfort. More decided drying qualities may be imparted to it by dissolving in it, with heat, about 3 per cent. of gelatine. For the preparation of chalk liniment with the glycerate of sucrate of lime, it is preferable to use a dilute solution, such as exists before the mixture is concentrated, as directed in a preceding paragraph. The formula for the liniment of the glycerate of sucrate of lime is as follows:—Ground-nut oil 2 parts, dilute glycerate of sucrate of lime 1 part. Mix in a vessel having a large mouth. By substituting oil of sweet almonds, a mixture is obtained that is a little less solid. In certain cases, where it is desired to combat the odor which is given off from the profuse suppuration of severe and extensive burns, the simple oil may be replaced by camphorated oil.

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Analysis of Ricinus Communis.—Prof. E. S. Wayne *(Am. Jour. Pharm.)* having noticed in the fluid extract of the plant a crystalline deposit was desirous of ascertaining its composition. Examination showed the crystals to be nitrate of potassium. Subsequently, these crystals were noticed in several other specimens of the fluid extract, and it became evident that the salt existed in the leaves of the plant in large quantity. It was also noticed that the dried leaves, when burnt, were consumed with scintillation and decrepitation almost like nitre paper. Becoming more interested in the subject, the author was tempted to extend his researches, and, ultimately, made a careful analysis of the leaves with a view of determining the character of the active principle present. In this he was successful, a proximate principle, crystallizing in square prisms and tables, but not possessing the properties of an alkaloid, was obtained. Subjected to a number of tests, this principle turned out to be identical with ricinin, a substance discovered in castor seeds, by Prof. Tuson. This substance has no action on litmus paper, and is not precipitated by iodohydrargyrate of potassium, but still appears to contain nitrogen. This principle exists in all parts of the plant. Analysis of the ash of the leaves showed large amounts of alkalies and phosphoric acid, and may be tabulated as follows:—

Lime	33.40
Magnesia	6.20
Potash	27.15
Soda	2.12
Peroxide of iron	.70
Phosphoric acid	6.68
Sulphuric acid	2.90
Chlorine	1.63
Carbonic acid	16.20
Silica and sand	2.41
Loss	.61
	100.00

Syrup of Iodide of Iron and Manganese.—Mr. J. U. Lloyd (*Am. Jour. Pharm.*) has tried the following formula for preparing this syrup, and, during a number of years, has found it to yield a very satisfactory product. The materials required are—Sulphate of maganese 240 gr., iodide of potassium 288 gr., iodine 744 gr., iron wire 240 gr., sugar 17 ounces avoir. The directions are to place the iodine, three ounces of distilled water, and the iron wire cut into small pieces, in a thin glass flask or a porcelain dish, shake or stir occasionally until the reaction ceases, and the solution has acquired a clear greenish color, without a tinge of yellow. Having introduced the sugar into a porcelain dish, filter the solu-

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tion of iodide of iron upon it. Wash the filter by pouring into it two ounces of distilled water, allowing the same to filter into the sugar. Dissolve the sulphate of maganese and iodide of potassium separately in one-half an ounce of cold distilled water by trituration in a mortar; mix the two solutions together, and allow the sulphate of potash to precipitate, then carefully remove the mixture into a moistened filter-paper within a glass funnel, and allow the solution of iodide of maganese to filter upon the sugar. When well drained, wash the precipitate within the funnel with one-half an ounce of cold distilled water, allowing it to filter into the sugar. Finally, finish the operation by adding to the above enough distilled water to make the whole measure twenty-fluid ounces; stir occasionally until dissolved, and filter.

Parrish's Syrup of the Phosphates.—A correspondent of the *Druggists' Circular* proposes a modification of the original formula for this preparation. This consists in the substitution of syrup of phosphoric acid, sp. gr. 1.500 for an equivalent quantity of glacial acid. It is claimed that the uncertain stability of the syrup, as prepared by the old formula, is, in great part, to be attributed to the use of glaical acid. The acid employed should form a perfect solution, without precipitate, when mixed with an equal bulk of tincture of perchloride of iron. It is also stated that the syrupy acid is superior to the diluted acid of the Pharmacopœia on account of its greater solvent power. It may either be obtained directly from phosphorus, or by evaporation of the diluted acid. The formula recommended is as follows:—

Freshly precipitated phosphate of iron - - -	128 grains.
" " phosphate of lime - -	256 "
Phosphate of soda - - - - - - - - - -	128 "
Syrupy phosphoric acid s. g. 1.5 - - - - -	12 fluid drachms
Boiling water - - - - - - - - - - - -	4 ounces.
Syrup - - - - - - - - - - - - - -	q. s.

The salts of soda, lime, and ammonia, are, with half the phosphoric acid, dissolved in the boiling water. The remainder of the acid is mixed with one ounce of syrup and triturated with the iron salt. The two solutions are then mixed and syrup added to the bulk of sixteen ounces.

Improvement in the Preparation of Phosphorated Resin.—Mr. A. C. Abraham, *(Pharm. Jour. and Trans.)* alludes to certain objections to the mode of preparation proposed by Mr. Gerrard, (see *Can. Pharm. Jour. Feb. p.* 233). The process involves the ap-

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plication of a strong heat, giving rise to danger and inconvenience as well as having the effect of deteriorating the product by the oxidation of the phosphorus, or by its conversion into the amorphous form. To obviate these disadvantages the writer proposes to use some resin fusible below the boiling point of water, and also sufficiently heavy to sink in that liquid. Balsam of tolu is suggested as answering both requirements, and by its use the combination can be effected entirely under water. Experiment has shown that four grains of phosphorus are perfectly dissolved by ninety-six grains of washed tolu, if melted together under water and well stirred. The preparation so made, when examined microscopically, does not show any particles of undissolved phosphorus, and when seen in the dark, and rubbed between the fingers, it gives a perfectly *equally distributed* light. This preparation, may therefore, be formed into pills, with every confidence in the equal distribution and activity of the phosphorus.

Curious Formation of Crystals.—A correspondent of the *Druggists' Circular* communicates an idea which might perhaps be turned to good account in the production of objects for shop-window ornamentation. If a lump of granulated pure chloride of ammonium be carefully introduced into a solution of nitrate of lead, best in a wide-mouthed bottle, there will soon appear pillars of crystals resembling in some respects the amorpho-crystalline appearance of commercial starch, or more accurately angular snowbanks. The result is very beautiful, but besides, affords an excellent opportunity to notice the mode of formation. The minute crystals of chloride of lead will be seen to rise from all sides at the base of the forming pillars, and, ascending above their summits, will describe an inward curve and fall on top. This process being continued, the pillars will rise rapidly. I attempt no explanation of the currents so plainly visible, but think the fact is not void of interest from its bearing on the causes of crystalline form. If commercial fibrous chlorides of ammonium be used instead of that described, the result is extremely remarkable from an artistic point of view, but does not show the currents so distinctly.

Cotton Seed Oil—It is said that in the United States over 150,000 tons of cotton seed are used, annually, for the manufacture of oil. The greater portion of this product goes to the olive growing districts of Europe, from whence, after certain manipulations, it is returned as olive oil.

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Medicated Candles.—One of the latest novelties is that of medicated candles, which, while burning, diffuse the odor of various balsamic substances used in their manufacture. Benzoin and storax have been so employed ; these, as well as many other drugs, may, when thus used, prove beneficial in cases of bronchial and asthmatic affections.

Are Pepsin and Pancreatine Incompatible ?—This question is answered by Mr. George Luis (*Pharmacist and Chemical Record*), who, as a result of several experiments, states it as his belief that these substances can be used in combination, provided the mixture is not rendered strongly acid.

Color of Oil of Cajuput.—M. Histed (*Neues Jahrb. f. Pharm. in Pharmacist and Chemical Record*) confirms the conclusions of Wiggers that the green coloration of cajaput oil is due to traces of copper derived formerly from the copper vessels in which the oil was transported ; but, now the oil is shipped in glass bottles, the coloration must be intentional.

Prevention of Explosions in the Generation of Hydrogen.—In the authority named in the preceding paragraph is a note by R. Fresenius to the effect that accidental explosions of hydrogen, of which most students have some experience, may be prevented by inserting, at the exit of the wash-bottle, a small tube containing small discs of wire netting pressed between cotton.

Adulteration of Carrageen Moss.—J. Dalmon (*Phar. Jour. and Trans.* from *Repert. de Pharm.*) reports the adulteration of carragen, *Fucus crispus* by *gigartina acicularis*, some samples showing an admixture of forty per cent of the latter. The *gigartina* may be distinguished by its cylindrical, cartilaginous, subdichotomous, flexuous fronds, with acuminate most frequently bifurcated branches, sending our lateral, horizontal spiniform branchlets. A light brown tint is retained by the pedicels which gives to the mass a less uniform color than that ordinarily exhibited by carrageen. The jelly yielded by the *gigartina* is much inferior to that from carrageen.

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Students' Department.

BOTANICAL TALKS AND RAMBLES WITH CANADIAN STUDENTS.

I.

The object of this series of papers is not so much that of teaching botany as of exciting the interest of students, and of directing or aiding them in the prosecution of this delightful study. To call the study of botany delightful, is, perhaps, as trite and commonplace an observation as could possibly be made. Every writer dilates on the pleasure to be derived from the subject, but, unfortunately, there are few who can be induced to become its votaries. Many persons make the attempt, but are met at the outset with such an array of seemingly unintelligible and outlandish terms that, after a short assay, they turn from the subject in disgust. Others, by reason of their utilitarian views, are deterred from even making an attempt. With this class, however, we have nothing to do, as pharmaceutical students must be aware of the practical importance of knowledge of this kind, and even should they have any doubts in regard to its general utility, they are compelled to recognize its claims as an essential of pharmaceutical education as at present constituted.

In the examinations which have been held under the auspices of the College of Pharmacy, the deficiency of botanical knowledge evinced by the candidates was very marked. In the last examination, the questions given were of the simplest possible character, but, despite this, the answers were, in general, few, meagre and imperfect—several of the candidates being even unable to answer even one question. It is certain that a considerable proportion of those who succeeded in passing these examinations would, undoubtedly, have failed to do so if their deficiency in botany had not been made up by their proficiency in other branches. It is probable that, in subsequent examinations, candidates will be required to obtain a stated percentage of marks in each subject, and that failure in one branch will affect disastrously the entire result. In this case, our young friends had better apply themselves diligently to the study of each of the required branches, and if there is any subject to which they are indifferent, and perhaps even regard with

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dislike, let them of all things devote to such extra attention. They will then find that not only will they gain mental power and manliness by the effort, but that the object of dislike will be changed to one of love, and that which was viewed with indifference will be contemplated with pleasure.

By thus urging necessity as the chief incentive to study we have caused the subject to assume its meanest and narrowest aspect. We have purposely put the worst side outwards, so that we may reach the worst and most dissaffected cases. We trust and believe that such cases are few, and that the majority of our readers are willing and anxious to tread with us the pleasant fields which will by and by open to our view.

We have said that this series of articles will not take the form of consecutive lessons, in which the subject is treated in a legitimately systematic manner, but rather that of conversational instruction, where the writer and his readers may together go over the same ground, whether such be the pages of our text book, or the flowers and plants of the current month.

The student should at once obtain a copy of Gray's *Lessons in Botany*, or some other strictly elementary work; and Gray's *Manual of Botany of the Northern United States*. The price of the first named work is $1; the last $2.25. If any student cannot conveniently procure either, we will obtain them for him.

The first twelve chapters of the *Lessons* should be at first thoroughly understood; but it will not be absolutely necessary to commit to memory the many technical terms with which this part of the book abounds. If the student studies well the substance of the lessons, he will remember many of the terms connected therewith, and the practical application of the knowledge thus acquired, together with the references we shall make to the subjects treated, will fix indelibly in his mind this seemingly difficult matter of nomenclature.

By pursuing the course indicated, the student will have a superabundance of work for this month, and the promised flowers of May will give us plenty of work for that succeeding.

Toronto, March 25th.

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Answers to Correspondents.

Druggist.—SALE OF SPIRITUOUS LIQUORS.—For the sake of other readers the enquiries of this correspondent are given in full: "1st. Can a druggist sell wine or liquors for medicinal purposes without a certificate or prescription from a doctor, when the druggist is perfectly satisfied that the liquor is intended for such purposes? 2nd. Can a druggist sell alcohol for use in the arts—as to photographers, jewellers, etc.—without an order from a medical man? 3rd. Is a druggist liable to fine if he sells alcohol, wine, or spirituous liquor of any kind, when such is mixed with drugs—as quinine, camphor, guaiac or aloes? In answer to those questions we may say that by the *Act to amend the Acts respecting Tavern and Shop Licenses*, passed during the early part of last year, druggists are exempted from any of the restrictions and penalties named, as it is specially stated that the licensing clause does not apply "to any chemist and druggist, duly registered as such, under and by virtue of the *Pharmacy Act of* 1871, who keeps or has such liquors for medicinal purposes only." This covers the first and third questions. In regard to the second we cannot quote for you the exact law but we are under the impression that the sale of alcohol for use in the arts is legally permitted. In any case it has been an established custom for druggists to sell such without any restriction whatever. It is obvious that in such instances a physician would not be qualified to give a certificate as he could not be supposed to have any knowledge of the use of alcohol except as far it relates to medicine.

Blue Pill.—PASTE FOR LABELS ON TIN.—See page 306 of present number. This correspondent sends the following formulæ:

DECOLORIZED TINCTURE OF IODINE.

Tinct. Iodinii	1 ounce.
Acid. carbolic cryst.	4 drops.
Liq. ammon. fort	12 drops.

WHITE ROSE COLOGNE.

Tinct. orris (8 oz. to 1 pint. pure spirit)	4 ounces.
Ol. Neroli	6 minims.
" Patchouli	6 "
" Rosæ	8 "
Ext. white rose	2 ounces.
" Musk	½ ounce.
Pure Spirit	1½ pints.
Rose Water	8 ounces.

It would be better to make the tincture of orris of a strength of 4 oz. to 1¼ pints, using this instead of the pure spirit in the formula.—ED.

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A Druggist.—HAMILTON.—The case to which you refer was brought up at the last meeting of the Council, and the Registrar was instructed to take legal proceedings against these persistent offenders.

Student, Barrie.—You need not necessarily study the classification of Linnæus, but it would be of advantage were you acquainted with it. The Natural System is now generally adopted, and probably it is on this that your knowledge would be tested by the Board of Examiners. The text books you should obtain are Gray's *Lessons on Elementary Botany*, and Gray's *Manual of Botany of the Northern States*. The price of the latter is $2.25; that of the former about one dollar.

Transactions of Pharmaceutical Colleges and Societies.

MONTREAL COLLEGE OF PHARMACY.

The regular monthly meeting of this College was held on Thursday evening, the 5th inst., in the lecture room of the Pharmaceutical Association of the Province of Quebec. Mr. Henry R. Gray, President, in the chair. After the Secretary, Mr. James Mattinson, had read the minutes, and the usual routine business had been attended to, Dr. J. Baker Edwards delivered a very instructive lecture on the blow-pipe, microscope, and spectroscope, as aids to qualitative analysis, each of which he described very minutely, especially dwelling upon the beauties and uses of a splendid compound acromatic miscroscope which he had before him. The conclusion of the lecture was illustrated with the spectroscope. The spectra of lithium, sodium, strontium, &c., being shown by Dr. Shaw, who kindly assisted the lecturer.

A vote of thanks was proposed by Mr. C. Hoffman, and seconded by Mr. R. J. Devins, and the meeting adjourned.

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Practical Formulæ

Styptic Collodium.—The Dublin *Medical Press and Circular* gives the following formula:

Tannic Acid	2 ounces.
Alcohol	4 fluid ounces.
Ether	12 fluid ounces.
Canada Balsam	1 drachm.
Pyroxylin	1 drachm, 2 scruples.

Dissolve the tannin in one ounce of the alcohol, mix the Canada balsam in the ether, add the remaining alcohol and in the mixture dissolve the soluble cotton.

Cacao Cream.—

℞.	Oleum theobromæ	16 ounces.
	" ricini	96 ounces.
	" bergamii	6 drachms.
	" limonis	1½ ounces.
	" citronellæ	1½ drachms.
	" lavandulæ	4 drachms.
	Spts. coloniensis, 95 per cent	64 ounces.

Melt the oil of theobroma, warm the castor oil and mix. Dissolve the essential oils in the cologne spirit. Fill the bottles two-thirds full with the first mixture, and fill balance of bottle with the perfumed spirit. This forms an elegant mixture for dressing the hair, and is quite popular with many. In very cold weather it becomes quite hard, but a little heat soon renders it fluid.—T. S. Glenn in *Am. Jour. Pharm.*

A Remedy for Chilblains.—One ounce of tannic acid is to be dissolved in about a pint of water, and four scruples of iodine in a sufficiency of concentrated alcohol. The two solutions are then mixed together, and enough water is added to make up two pints of fluid. The best time for using the remedy is on going to bed. The solution is placed on a slow fire in an earthen or china vessel; the part affected with chilblains is then introduced into the fluid, and it is to be kept there until the liquid becomes too hot to be borne. The part is then to be withdrawn, and to be dried by being kept near the fire. When the chilblains are ulcerated it is best to diminish the quantity of iodine.—*Repertoire de Pharmacie.*

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Marrow Pomade.—

Butter of cacoa	4½ ounces.
Pure white lard	22½ "
Melt over a gentle fire, and add oil of mace	2 "
Strain, and add while warm, rose-water	4 "
Tincture of cantharides	½ ounce.
Agitate until cool, and finally add oil jasmin	1½ drachms.
Oil bergamot	3 "
" lemon,	
" Engl. lavender aa	1 drachm.
" cloves	2 scruples.
" rose	36 drops.
" neroli	30 "
" cinnamon	10 "
" bitter almonds	4 "
Tincture musk	24 "

M.

Finally, dissolve ext. rhatany 36 grains, in suf. q. of alcohol dil., and tincture of Spanish saffron, to color.
—*Correspondent of Druggists' Circular.*

Varieties.

Plants in Sleeping Rooms.—In a recent number of the *St. Louis Medical and Surgical Journal* is a letter from Mr. Kedzie, in which he quotes a paragraph from Professor Johnson's "How Crops Feed," in which it is stated very correctly that the quantity of carbonic acid absorbed by day by plants in direct light is vastly greater than than that exhaled during the night. According to Corenwinder's experiment, fifteen to twenty minutes of direct sunlight enable the colza, the pea, the bean. the raspberry, and sunflower to absorb as much carbonic acid as they exhale during a whole night. Boussingault found as the average of a number of experiments that a square meter of oleander leaves decomposed in sunlight 1·108 litres of carbonic acid per hour ; in the dark the same surface of leaf exhaled ·07 litre (each litre is equal to about two pints and one-eight) of this gas. From this it would appear that the balance is likely to be in favour of their utility in purifying the air, especially as during the day they eliminate oxygen. In order, however, to determine the point, Mr. Kedzie collected air from the college green-house, in which there were more than 6,000 plants, before sunrise, and after the room had been closed more than twelve hours. The average of five analyses showed that there were 3·94 parts of carbonic acid in 10,000 of air, and it thus appears that the air in the greenhouse was better than "pure country air," which contains four parts in 10,000. To ascertain whether the air in the green-

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house had more carbonic acid by night than by day Mr. Kedzie analysed two specimens at 2 p.m. These gave 1·40 and 1·38 parts, showing that the night air contained more carbonic acid than did the air of the day. On the whole, it may be safely concluded that the presence of one or two dozen plants in a room will not exhale enough carbonic acid by night to injure the sleepers.—*Lancet.*

A LEAD AND ZINC BATTERY.—A new form of galvanic battery invented by Pierlot is thus described in *Comptes Rendus :* In a suitable glass or earthenware vessel is placed about a pound of chloride of lead, into which is inserted a plate of lead with a varnished lead wire attached. In the other part of the vessel is inserted an amalgamated zinc plate about nine millimeters thick, covered with a bag of parchment paper. Every two or three months water is added. The current is said to be strong and constant.—*Journal of Applied Chemistry.*

Registrar's Notices.

☞ Don't forget to pay your annual fee of four dollars on or before the first day of May.

The Registrar begs to draw the attention of members to the following extract from Section 17 of the Pharmacy Act :—

"And there shall be payable to the Registrar of the said College, for the uses of the College, on the first day of May of each year, by every person registerd and carrying on business as a Pharmaceutical Chemist, the sum of four dollars."

It is hoped that every druggist in the province will not delay in complylng with the above, and remit the amount to the Registrar.

GEORGE HODGETTS, Registrar.

The Registrar would remind those druggists who have not furnished themselves with the Sale of Poisons Book, that they can have one sent to their address by remitting the sum of sixty cents. The book contains, besides the Pharmacy Act, a great deal of useful information to druggists; it is ruled, in accordance with Schedule "B," for the entry of the sales of poison, to the number of 3,000. The book can also be had from Messrs. Lyman, Bro. & Co., Messrs. Elliot & Co., Toronto; Messrs. T. Bickle & Son, Hamilton.

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Drugs, Medicines, &c.	$ c.	$ c.
Acid, Acetic, fort	0 14 @	0 15
Benzoic, pure	0 23	0 30
Citric	1 40	1 50
Muriatic	0 05	0 06
Nitric	0 11½	0 15
Oxalic	0 22	0 26
Sulphuric	0 03¾	0 07
Tartaric, pulv	0 50	0 50
Ammon, carb. casks	0 23	0 24
" jars	0 23	0 24
Liquor, 880	0 25	0 28
Muriate	0 14	0 15
Nitrate	0 45	0 60
Æther, Acetic	0 45	0 50
Nitrous	0 35	0 37
Sulphuric	0 50	0 50
Antim. Crude, pulv	0 15	0 17
Tart "	0 55	0 65
Alcohol, 95 per ct.....Cash	1 65	1 72
Arrowroot, Jamaica	0 18	0 22
Bermuda	0 50	0 65
Alum	0 02¾	0 03½
Balsam, Canada	0 50	0 50
Copaiba	0 95	1 00
Peru	3 75	4 00
Tolu	0 90	1 00
Bark, Bayberry, pulv	0 20	0 22
Canella	0 17	0 20
Peruvian, yel. pulv	0 42	0 50
" red "	2 10	2 20
Slippery Elm, g. b	0 15	0 20
" flour, packets	0 28	0 32
Sassafras	0 17	0 20
Berries, Cubebs, ground	0 20	0 25
Juniper	0 06	0 10
Beans, Tonquin	0 62	1 10
Vanilla	30 00	30 00
Bismuth, Alb	3 30	4 00
Carb.	3 50	4 00
Camphor, Crude	0 38	0 40
Refined	0 45	0 50
Cantharides	2 50	2 60
Powdered	2 60	2 70
Charcoal, Animal	0 04	0 06
Wood, powdered	0 10	0 15
Chiretta	0 20	0 30
Chloroform	1 10	1 65
Cochineal, S. G	0 75	0 90
Black	1 10	1 20
Colocynth, pulv	0 60	0 65
Collodion	0 70	0 80
Elaterium.....oz	3 20	4 00
Ergot	0 35	0 45
Extract Belladonna	1 50	1 60
Colocynth, Co	1 25	1 75
Gentian	0 50	0 60
Hemlock, Ang	0 85	0 95
Henbane, "	1 50	1 60
Jalap	5 00	5 50
Mandrake	1 75	2 00
Nux Vomic.....oz	0 40	0 50
Opium.....oz	1 50	
Rhubarb	5 00	5 50
Sarsap. Hon. Co	1 00	1 20
" Jam. Co	3 50	4 00
Taraxacum, Ang	0 70	0 80
Flowers, Arnica	0 17	0 25
Chamomile	0 32	0 40
Gum, Aloes, Barb. extra	0 70	0 80
" " good	0 40	0 50
" Cape	0 16	0 20
" " powdered	0 20	0 30
Socot	0 50	1 35
" " pulv	1 00	0 00
Arabic, White	0 70	0 75
" powdered	0 60	0 75
" sorts	0 24	0 30
" " powdered	0 42	0 50
" com. Gedda	0 13	0 16
Assafœtida	0 40	0 42
British or Dextrine	0 13	0 15
Benzoin	0 35	0 75
Catechu	0 12	0 15
" powdered	0 25	0 30
Euphorb, pulv	0 35	0 40
Gamboge	1 40	1 50
Guaiacum	0 90	1 00
Myrrh	0 50	0 70

Drugs, Medicines, &c.—*Contd.*	$ c.	$ c.
Sang Dracon	0 60	0 70
Scammony, powdered	6 00	6 50
" Virg. "	14 50	—
Shellac, Orange	0 80	0 85
Gum, Shellac, liver	0 75	0 80
Storax	0 40	0 45
Tragacanth, flake	1 10	1 40
" common	0 53	0 65
Galls	0 28	0 32
Gelatine, Cox's 6d	1 15	1 20
Glycerine, common	0 25	0 30
Vienna	0 29	0 30
Prices	0 60	0 75
Honey, Canada, best	0 15	0 17
Lower Canada	0 14	0 16
Iron, Carb. Precip	0 20	0 25
" Sacchar	0 40	0 55
Citrate Ammon	1 65	1 70
" & Quinine, oz	0 55	0 58
" & Strychine	0 20	0 25
Sulphate, pure	0 08	0 10
Iodine, gocd	6 75	7 00
Resublimed	7 50	8 00
Jalapin	1 25	1 50
Kreosote	2 40	2 50
Leaves, Buchu	0 22	0 30
Foxglove	0 25	0 30
Henbane	0 35	0 40
Senna, Alex	0 27	0 60
" E. I.	0 14	0 20
" Tinnevilly	0 20	0 30
Uva Ursi	0 15	0 17
Lime, Carbolate.....brl	5 50	—
Chloride	0 05	0 06
Sulphate	0 08	0 12
Lead, Acetate	0 15	0 16½
Leptandrin.....oz.	0 60	—
Liq. Bismuth	0 50	0 75
Lye, Concentrated	1 75	2 00
Liquorice, Solazzi	0 50	0 55
Cassano	0 23	0 40
Other brands	0 14	0 25
Liquorice, Refined	0 35	0 45
Magnesia, Carb..... 1 oz.	0 20	0 25
" ..... 4 oz.	0 17	0 20
Calcined	0 65	0 75
Citrate.....gran.	0 63	0 75
Mercury	1 85	1 90
Bichlor	1 70	1 75
Chloride	1 80	1 90
C. Chalk	0 75	80
Nit. Oxyd	1 90	2 00
Morphia Acet	4 45	4 60
Mur.	4 45	4 60
Sulph	4 60	4 75
Musk, pure grain.....oz	25 00	—
Canton	0 90	1 20
Oil, Amonds, sweet	0 40	0 45
" bitter	14 00	15 00
Aniseed	4 00	4 25
Bergamot, super	6 50	6 50
Caraway	3 20	3 50
Cassia	2 25	2 50
Castor, E. I	0 14	0 15
Crystal	0 22	0 25
Italian	0 26	0 28
Citronella	1 25	1 35
Cloves, Ang	3 00	3 00
Cod Liver	1 5	1 50
Croton	1 75	2 00
Juniper Wood	0 80	1 00
Berries	6 00	7 00
Lavand, Ang.....oz.	0 90	1 00
Exotic	1 40	1 60
Lemon, super	4 60	5 75
ord	3 20	3 40
Orange	3 00	3 25
Origanum	0 65	0 75
Peppermint Ang	15 00	16 00
" Amer	5 00	5 50
Rose, Virgin	8 50	8 75
" good	6 80	7 00
Sassafras	0 75	1 90
Wintergreen	6 00	6 50
Wormwood, pure	4 00	6 50
Ointment, blue	1 30	1 40
Opium, Turkey	8 25	8 50
pulv	10 00	10 50

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DRUGS, MEDICINES, &c.—*Cont'd*	$ c.	$ c
Orange Peel, opt.	0 30	0 36
" good	0 12½	0 20
Pill, Blue, Mass	1 30	1 40
Potash, Bichrom	0 23	0 27
Bi-tart	0 33	0 35
Carbonate	0 14	0 20
Chlorate	0 50	0 55
Nitrate	10 50	11 00
Potassium, Bromide	1 00	1 10
Cyanide	0 60	0 65
Iodide	5 75	6 25
Sulphuret	0 25	0 35
Pepsin, Boudault's...oz	1 40	—
Houghton's..... doz.	8 00	9 00
Morson's.....oz.	0 85	1 10
Phosphorous	0 95	1 00
Podophyllin	0 50	0 60
Quinine, Pelletier's	—	2 45
Howard's	2 40	—
" 100 oz. case.	2 35	—
" 25 oz. tin..	2 35	—
Root, Colombo	0 13	0 20
Curcuma, grd	0 12½	0 17
Dandelion	0 17	0 20
Elecampane	0 16	0 17
Gentian	0 08	0 10
" pulv	0 15	0 20
Hellebore, pulv	0 17	0 20
Ipecac, "	1 50	1 60
Jalap, Vera Cruz	90	1 15
" Tampico	0 70	1 00
Liquorice, select	0 12	0 13
" powdered	0 15	0 20
Mandrake "	0 20	0 25
Orris, "	0 20	0 25
Rhubarb, Turkey	2 50	2 75
" E. I.	1 10	1 20
" " pulv	1 20	1 30
" " 2nd	0 90	1 00
" French	0 75	—
Sarsap., Hond	0 40	0 45
" Jam	0 88	0 90
Squills	0 10	0 15½
Senega	1 10	1 20
Spigelia	0 25	0 30
Sal., Epsom	2 25	3 00
Rochelle	0 32	0 35
Soda	0 02½	0 03
Seed, Anise	0 13	0 16
Canary	0 05	0 06
Cardamon	2 25	2 50
Fenugreek, g'd	0 09	0 10
Hemp	0 06½	—
Mustard, white	0 14	0 16
Saffron, American	1 00	1 10
Spanish	12 00	13 00
Santonine	7 50	8 00
Sago	0 08	0 09
Silver, Nitrate.....Cash	14 85	16 50
Soap Castile, mottled	0 11	0 14
Soda Ash	0 04	0 05
Bicarb. Newcastle	—	6 50
" Howard's	0 14	0 16
Caustic	0 05½	0 05¾
Spirits Ammon., arom	0 35	0 35
Strychnine, Crystals	2 25	2 50
Sulphur. Precip	0 10	0 12½
Sublimed	0 03½	0 05
Roll	0 03	0 04½
Vinegar, Wine, pure	0 55	0 60
Verdigris	0 35	0 40
Wax, White, pure	0 75	0 80
Zinc. Chloride.....oz	0 10	0 15
Sulphate, pure	0 10	0 15
" common	0 06	0 10
DYESTUFFS.		
Annatto	0 35 @	0 60
Aniline, Magenta, cryst	2 50	2 80
liquid	2 00	—
Argols, ground	0 15	0 25
Blue Vitrol, pure	0 10	0 10
Camwood	0 06	0 09
Copperas, Green	0 01½	0 02½
Cudbear	0 16	0 25
Fustic, Cuban	0 02½	0 04
Indigo, Bengal	2 40	2 50
Madras	0 90	0 95
Extract	0 30	0 35

DYESTUFFS—*Continued.*		
Japonica	0 07¾	0 08
Lacdye, powdered	0 33	0 38
Logwood	0 02½	0 03
Logwood, Camp	0 02½	0 3½
Extract	0 10	0 14
" 1 lb. bxs	0 13	—
" ½ lb. "	0 14	—
Madder, best Dutch	0 13	0 15
2nd quality	0 12	0 14
Quercitron	0 03	0 05
Sumac	0 06	0 08
Tin, Muriate	0 10½	0 12½
Redwood	0 05	0 06
SPICES.		
Allspice	0 11½@	0 12
Cassia	0 39	0 40
Cloves	0 46	0 48
Cayenne	0 28	0 30
Ginger, E. I.	0 19	0 20
Jam	0 20	0 30
Mace	1 65	1 75
Mustard, com	0 20	0 25
Nutmegs	1 15	1 20
Pepper, Black	0 22½	0 23
White	0 48	0 50
PAINTS, DRY.		
Black, Lamp, com	0 07 @	0 08
" refined	0 25	0 30
Blue, Celestial	0 08	0 12
Prussian	0 65	0 75
Brown, Vandyke	0 10	0 12½
Chalk, White	0 01	0 01½
Green, Brunswick	0 07	0 10
Chrome	0 16	0 25
Paris	0 30	0 35
Magnesia	0 20	0 25
Litharge	0 07	0 09
Pink, Rose	0 12½	0 15
Red Lead	0 07¼	0 08
Venetian	0 02½	0 03½
Sienna, B. & G	0 07	0 08
Umber	0 07	0 10
Vermillion, English	1 85	1 90
American	0 25	0 35
Whiting	0 85	0 90
White Lead, dry, gen	0 08½	0 09
" " No. 1	0 07	0 08
" " No. 2	0 05	0 07
Yellow Chrome	0 12½	0 35
" Ochre	0 02½	0 03½
Zinc White, Star	0 10	0 12
COLORS, IN OIL.		
Blue Paint	0 12 @	0 15
Fire Proof Paint	0 06	0 08
Green, Paris	0 30	0 37½
Red, Venetian	0 07	0 10
Patent Dryers, 1 lb tins	0 11	0 12
Putty	0 03¾	0 04½
Yellow Ochre	0 08	0 12
White Lead, gen. 25 lb. tins	2 50	—
" No. 1	2 25	—
" No, 2	2 00	—
" No. 3	1 75	—
" com	1 30	—
White Zinc, Snow	2 75	3 25
NAVAL STORES.		
Black Pitch	5 00 @	5 25
Rosin, Strained	4 50	—
Clear, pale	7 80	—
Spirits Turpentine	0 60	0 62
Tar Wood	5 50	5 75
OILS.		
Cod	0 63 @	0 70
Lard, extra	0 85	0 90
No. 1	0 75	0 80
No. 2	0 72	0 75
Linseed, Raw	0 75	0 80
Boiled	0 80	0 85
Olive, Common	1 10	1 20
Salad	1 80	2 30
" Pints, cases	4 20	4 40
" Quarts	3 25	3 50
Seal Oil, Pale	0 70	0 70
Straw	0 68	0 70
Sesame Salad	1 30	1 35
Sperm, genuine	2 30	2 40
Whale refined	0 90	0 95

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Original and Selected Papers.

BUCHU LEAVES.*

BY PROFESSOR F. A. FLUCKIGER.

The leaves of species of *Barosma* growing at the Cape, known under the name of buchu leaves, are but little used, and have not yet been the objects of a chemical or microscopical investigation, although worthy in a high degree of both. The smell of buchu leaves appears to the author not alone to depend upon the essential oil, for in this respect it is more suggestive of peppermint. By long exposure to the cold of winter he has obtained from the oil a well crystallized camphor which melts at 85° C. and commences to sublime at 110° C. It dissolves in bisulphide of carbon, from which it may be obtained in fine needles that might well be taken for peppermint stearoptine. The elementary analysis gave, carbon 74·07, and hydrogen 9 to 10, but it was not sufficiently satisfactory to construct a formula from. The oil poured off from the camphor of *Barosma betulina* does not boil under 200° C., and after being rectified over soda, answers to the formula $C_{10}H_{16}O$. The crude oil turns the plane of polarization to the left.

* Abstract of an article in the *Schweizerische Wochenschrift fur Pharmacie*, Dec. 19, 1873, published in the *Pharm. Jour. and Trans.*

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The aqueous infusion of the leaves contains some mucilage, and a body which belongs probably to the quercitrin or rutin class; the extract is not altered by ferrous salts; it is coloured greenish brown by ferric chloride, and gives with acetate of copper a yellow precipitate which is soluble in potash. Further experiments are required to show what this body is.

In an anatomical point of view buchu leaves appear at first sight remarkable by the large sperical oil vessels, which however do not claim any especial interest. If a transverse section of a *Barosma betulina* leaf be made, three layers can be discerned in the inner tissue. The thickest, occupying the middle of the leaf, is coloured green by chlorophyll, which is much less the case with the considerably smaller layer occupying the space between the chlorophyll layer and the under side of the leaf. A third layer, in a section prepared in alcohol or oil, is scarcely perceptible. It appears as a small uncoloured zone directly under the epidermis of the upper side of the leaf, in which, differing from the under side, no oil vessels appear. There may be seen also the filbrovascular tissue, the raphides, the cuticle and the epidermis constituting the skin tissue of the leaf.

If a section of *Barosma* leaf be placed in glycerine the epidermis of the upper side is raised by a mechanical action which resembles that which takes place when the epidermis of linseed, white mustard seed, quince seed, etc., is saturated with water. The delicate walls of the colourless cells in the last mentioned layer swell up, and protruding perpendicularly to the surface of the leaf, let a thick slime run out, in which the cell walls gradually disappear. At first there seems in this cellular slime an appearance of delicate stratification as in many other similar cases. The mucilage is not coloured by iodine, consequently it may be considered to approach nearer to cellulose. Under the influence of glycerine the mucilaginous layer of the leaves of *Barosma betulina* assumes the development described quite gradually; but it is produced much more quickly when the leaves are placed under water. In the latter case this layer occupies fully half the breadth of the section.

The leaves of the *Barosma crenulata* and *B. serratifolia* are, as is known, much thinner, being about half as thick as those of *B. betulina*. When these thinner leaves are placed in alcohol the mucilaginous layer remains scarcely perceptible, but in water it swells equally with that of the other kind. The breadth of this layer is then proyortionately much more considerable in the thinner species, taking up two-thirds the breadth of the section of a leaf.

Whilst we are accustomed to find the epidermis to be the seat of the mucilaginous formation in the seeds, and to meet with special mucilage cells in the cortex, in the buchu leaf this function belongs to a row of cells (collenchyma) in the interior, without the epidermis having any share in it, if we, at least, leave out of consideration the

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fact that here and there isolated prolongations of cells extend from the epidermis into the mucilaginous layer.

The author does not know whether other leaves present similar conditions; In *Althæa* leaves, after quite a cursory examination, this appeared to him to be no more the case than in those of *Sesamum indicum*, which are tolerably mucilaginous. *Empleurum serrulatum*, on the other hand, resembles *Barosma*.

CROTON CHLORAL.*

BY ALFRED H. MASON, F.C.S.

A new remedy, with chloral as its basis, and introduced by the discoverer of the therapeutical application of hydrate of chloral, naturally commands attention. At one of our general meetings in 1872 session I exhibited a specimen of this, then new, compound, named by Professor Liebreich croton chloral hydrate.

Within the last few months this medicine has commanded much more of the attention of medical men, so that the requirements of it somewhat exceed the first demand for its predecessor when sold at about the same price.

Crotonic chloral was discovered somewhat accidentally by Dr. G. Kraemer and Dr. A. Pinner.† These gentlemen were undertaking experiments on the action of chlorine on aldehyde, chiefly in the hope of thus obtaining chloral, and of being able to utilise the valueless residue from the first runnings obtained in the distillation of crude spirit, which consists mainly of alcohol, aldehyde, and paraldehyde.

Chlorine was passed into aldehyde, at first carefully cooled in a freezing mixture, and only heated to 100° at the close of the reaction. The first few bubbles caused the separation of a small quantity of solid met-aldehyde, whether originally present in the aldehyde, or formed by the reaction, is undecided. After a short time evolution of hydrochloric acid set in, and every trace of chlorine was absorbed. With 100 grains of aldehyde, at the end of 24 hours, no further absorption took place even at 100°. The resulting brown mass consists of two layers: a lower, darker, almost solid; and an upper, lighter coloured, liquid layer. The latter is a saturated solution of hydrochloric acid and the bodies of the lower layer in water. As it was found impossible to separate these two well, the whole was submitted to distillation. A considerable quantity passed over

*Read at the evening meeting of the Liverpool Chemists' Association, February 12, 1874, and published in the Chemist and Druggist.

†Ann. Ch. Pharm. clviii. 37.

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between 90° and 100°; the thermometer then rose rapidly to 160°, and the main product distilled over between this and 180°: the temperature again rose to about 240, but only decomposition products were obtained, and a considerable carbonaceous residue remained in the flask. By means of fractional distillation the portion boiling at 160° to 180° was quickly purified, and a body boiling at 163° to 165° was isolated, which proved to be crotonic chloral.

The specimen I have here was produced by passing perfectly dry chlorine gas over pure aldehyde ($C_2 H_4 O$)—the action is very violent, and many precautions have to be taken to prevent explosion and to condense the volatile products of the reaction, and still to allow the enormous quantities of hydrochloric acid gas to escape. After a time the liquid thickens; at this stage the current of chlorine can be passed through the liquid. After another interval it becomes necessary to warm, and at last to boil the liquid through which the chlorine is passing. At length hydrochloric acid ceases to be evolved, and crude croton chloral is obtained—the process taking about 48 hours to complete. This crude body is *mainly* ordinary chloral, but mixed with a variety of other products. By fractional distillation and treatment with sulphuric acid—true croton chloral ($C_4 H_3 Cl_3 O$)—trichlorcrotonic aldehyde is obtained. This is a dense oily liquid of peculiar odour, somewhat recalling ordinary chloral: treated with a considerable excess of warm water it hydrates and dissolves, and upon cooling, croton chloral hydrate ($C_4 H_3 Cl_3 O$, $H_2 O$) is deposited, but still in a crude form, most rank and offensive in flavour. It has to be purified by rather a tedious process, and is obtained, when pure, in beautiful white silvery crystals, with a sweetish melon flavour, which melt at 78° C.

From this it will be quite evident (and it is probably wise to note it) that this body does not bear any relation to croton oil, or crotonic acid, obtained therefrom, although its chemical constitution proves it to be the chlorated aldehyde of crotonic acid.

Croton chloral is the substance represented by the same term in the allyl ($C_3 H_5$) group that chloral has in the ethyl ($C_2 H_5$) group. Its outward appearance differs from hydrate of chloral by the salt being much lighter, and in flocculent silvery crystals—by its being almost insoluble in cold water and very soluble in alcohol: it is soluble in hot distilled water, and rendered more easily so by the addition of 25 per cent. of pure glycerine; it is insoluble in chloroform.

It will be remembered that hydrate of chloral owes its value as a medicinal agent to the supposed elimination of chloroform when it comes in contact with the alkalies of the blood, it having been shown that by reaction with alkalies chloroform is produced. Crotonic chloral, when subject to the influence of an alkali, first forms allyl-chloroform, a trichlorated body, which is rapidly decomposed into a bichlorated substance called bichlorallylene. In a communi-

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cation to the *British Medical Journal*, December 20, 1873, Dr. Leibreich says :—" Both chloroform and trichlorated substances act in the first stage upon the brain—in the second, on the spinal cord —in the third, on the heart."

Although Dr. Leibreich's theory has met with and still finds general favour, there are many medical men who think it has not any vital support, believing that chloral exercises a specific action of its own upon the organization, which is not to be reasoned out from an exclusively chemical basis.

The medicinal advantages of hydrate of croton chloral over ordinary hydrate of chloral are :—1st. In cases where hydrate of chloral is inapplicable on account of heart-disease (it does not interfere with the action of the heart). 2nd. In cases of neuralgia in the district of the nervus trigeminus (it is a remarkable phenomenon that when given in small doses it produces anasthesia of the fifth nerve, singling out one nerve, and that one alone, while the sensibility of the body generally and pulse and respiration remain unaffected). 3rd. In cases where very large doses are necessary to produce sleep, here Leibreich recommends the addition of croton chloral to hydrate of chloral.

Dr. Burney Yeo, of King's College Hospital, London, &c., is making a systematic investigation on the value of this medicine, and he lays his first communication in a paper published in the *Lancet*, January 31, 1874; he administered it in six different classes of cases, and gives details of each. The results he has arrived at are, that in croton chloral we possess a remedy of remarkable efficacy in some cases of neuralgia of the branches of the nervus trigeminus, and that it also has the power of affording relief in other obstinate forms of neuralgia; that it is of use in certain cases of diffused muscular pain; that there is scarcely any remedy that is likely to prove more valuable for the relief of the distressing night cough of chronic phthisis. Its efficacy in procuring sleep seems very variable in moderate doses; its effect in purely rheumatic cases is scarcely appreciable, while for hysteria it is of little or no use.

Dose.—Dr. Yeo says :—" I am satisfied that in dealing with this substance we must give an unusually wide range to the dose, for its effects vary greatly. The doses I have given varied from 1 to 10 grains. In delicate females I have found very decided effects from doses of 2 and 3 grains; in strong males a dose of 10 grains is often required to produce any appreciable effect. As may be expected, persons who have been accustomed to the use of anodyne medicines require larger doses than others."

The dose must always be proportionate to the severity and long continuance of the pain. I would advise that it should be always given in moderate and quickly repeated doses, until the amount of "tolerance in the medicine in each particular case has been discovered. In severe neuralgias, from 2 to 5 grains may be

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given every hour, or the smaller dose every half-hour, until 15 grains have been taken. At present I do not think it safe to go beyond this dose."

I have made several experiments with different solvents to present this medicine in a convenient form for dispensing, and before seeing Dr. Yeo's paper I found that the addition of glycerine was of great assistance in making the solution. I can fully endorse his decision. The following formulary yields the strongest solution that is permanent:—

Croton Chloral Hydrate.....	64 grains.
Pure Glycerine.....	½ ounce.
Hot Distilled Water	1½ "

A syrup can be made containing 2 grains of croton chloral hydrate in the fluid dram, by adding 4 ounces of simple syrup to the above solution, and the disagreeable taste may be removed by any flavouring the pharmacist sees fit to add.

NOTES ON THE ARECA PALM.*

Areca Catechu, L.

BY JOHN R. JACKSON, A.L.S., CURATOR OF THE MUSEUMS, KEW.

Some interest having lately arisen amongst pharmacists with regard to the Areca palm *(Areca Catechu, L.)* owing to its proposed introduction into the British Pharmacopœia as an officinal plant, a few notes on the tree itself and its uses may not be out of place.

The Areca palm is a handsome tree, growing to a height of from forty to sixty feet, with a slender, erect trunk, averaging from one to two feet in circumference. It has regular, pinnate leaves, and long, linear leaflets, of a rich, dark-green colour. The circumference of the trunk is annulated or distinctly marked with the scars of the clasping petioles of former leaves. The fruits are each about the size of a hen's egg, consisting of a fleshy looking drupe, which, however, on cutting, is found to be very fibrous, containing a seed about the size of a nutmeg, and like that well-known spice, ruminated or marked with thick, reddish-brown irregular lines throughout its entire substance These fruits are borne in large bunches, springing from the crown of leaves. The spathe itself is used in some parts for making drinking vessels, for nailing over the bottoms of boats, and various other purposes.

The tree is known best as the betel-nut palm, and is cultivated

* Pharmaceutical Journal and Transactions.

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in nearly all the warmer parts of Asia for the sake of the seeds, which are not only chewed in large quantities by the natives in countries where they grow, but are shipped to countries where the palm is not cultivated. The average annual produce of one tree is said to be about three hundred nuts. The tree is largely cultivated all over India, as well as in China, but is more abundant, perhaps, in Malabar, North Bengal, the lower slopes of the mountains of Nepaul, and the south-west coast of Ceylon. In Travancore alone there are nearly ten millions of these trees, the annual value of the produce of which is estimated at £50,000 stg. It is said that about 80,000 piculs of the nuts are annually produced on the coast of Sumatra. Many varieties of the betel-nut palm are known to the natives under different local names; the nuts also vary much in size, but their quality depends upon their appearance when cut through, "intimating the quantity of astringent matter contained in them. If the white or medullary portion which intersects the red or astringent part be small, and has assumed a bluish tinge, and the astringent part is very red, the nut is considered of good quality; but when the medullary portion is in large quantity the nut is considered more mature, and, not possessing as much astringency, is not esteemed so valuable."

The nuts are usually gathered between the months of August and November. The seeds are removed from the husk and boiled in water. In the first boiling the water becomes red and thick, and this is afterwards evaporated into catechu, but whether it is imported into this country as a commercial article is uncertain. The mode of collecting the catechu in Mysore is thus described :—"The nuts are taken as they come from the tree, and boiled for some hours in an iron vessel. They are then taken out, and the remaining water is inspissated by continual boiling. This process furnishes *kossa*, or most astringent *Terra japonica*, which is black, and mixed with paddy husks and other impurities. After the nuts are dried they are put into a fresh quantity of water and boiled again; and this water being inspissated, like the former, yields the best or cleanest kind of catechu, called *coony*. It is yellowish-brown, has an earthy fracture, and is free from the admixture of foreign bodies."

For the purpose of chewing, the nut is cut into narrow strips and rolled up with lime in the leaves of the betel pepper. The mixture has a hot, acrid taste, and aromatic and astringent properties. The habitual use of the betel-nut is considered by the natives to be very wholesome, but the effects are said by some to be due as much to the ingredients used with it as to the areca nut itself. Its constant use causes the teeth to become black and the mouth and lips of a brick red colour. In some parts of China the nuts, bruised and powdered, are mixed with the green food given to horses, and they are thus considered a preventive against diarrhœa. In

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the north of China small pieces of the nut are boiled and the decoction is taken as a domestic remedy in various visceral affections.

Though the use of the betel as a masticatory turns the teeth black, it is said to preserve them from decay in a remarkable manner, and this may be the reason why some English chemists have introduced the pulverized charcoal into this country as a tooth powder.

In Borneo the flowers, which are fragrant, are mixed with medicines and used as charms for the cure of many diseases. In some parts of India the juice of the young tender leaves mixed with oil is applied as an embrocation in cases of lumbago, and a decoction of the root is a reputed cure for sore lips, so that whatever may prove to be the value of the areca nut as an anthelmintic in this country, it is certain that the tree is much esteemed for its numerous uses in the East.

PROPERTIES, EXAMINATION, AND TESTING OF SOME OF THE MORE FREQUENTLY OCCURRING FATTY OILS IN THE VEGETABLE KINGDOM.*

BY G. GLASSNER.

One of the most difficult tasks of a pharmaceutist and chemist is the examination of fatty oils. These substances, besides resembling each other very much in appearance and sp. gr., show in a superficial chemical analysis only very slight differences, and leave the examiner frequently in the dark about their true nature, especially in the case of a mixture of such oils. It is often a matter of grave importance, not only for the pharmaceutist, but also for the public in general, to be able to determine the real purity of an oil. The fat oils of the vegetable kingdom are very numerous, and are found inclosed in separate cells in a large number of seeds and fruits. In order to obtain the oil, the cellular membranes are bruised, are exposed to pressure, or treated either with bisulphide of carbon or "gasoline." From these latter substances the oil is liberated by distillation. Such oils which are burnt, are freed from impurities by sulphuric acid; oils which are strongly colored may be bleached under the influence of light and sulphuric or chromic acid. Solution of permanganate of potash is used for the same purpose.

The fatty oils are mixtures of glycerides of fatty acids and oily acids. They are mostly liquid, nearly insoluble in water, and their sp. gr. is below that of water. They readily dissolve in ether, chlo-

*Translated in American Chemist from Archive fuer Pharmacie.

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roform, and ethereal oils, but with difficulty in alcohol, with the sole exception of castor oil. They possess the property of dissolving sulphur and phosphorus. If fatty oils are brought in contact with a solution of caustic potash and are strongly agitated, a decomposition takes place, in which the fatty and oily acids combine with the alkali, and glycerin is liberated (saponification).

Also other metallic oxides act upon fatty oils, and form with them more or less fixed compounds, so-called plasters. Heated to about 500° C. they volatilize under decomposition. The acids are liberated, whilst the glycerin, not volatile without decomposition when exposed to the air, gives off vapors of acrolein, which are easily recognized by their pungent odor. Concentrated sulphuric acid decomposes the oils, unites with the base to glycero-sulphuric acid, and sets free the fatty acids. HNO_3, Cl, Br, I form substitution products. Fatty oils produce a stain on paper, which even heat is not able to remove.

Exposed to the air, fatty oils absorb oxygen, and after some time become thick. Based upon these properties, the fatty oils are divided into those which dry out entirely, and those which become smeary and viscid, but never a hard mass, even if present in very thin layers. The former are employed in the preparation of varnishes and paints. The oils which do not dry out, give off, after standing some time, a rancid smell, and have a disagreeable taste. This rancidity is a true fermentation, which is promoted by the presence of putrescible substances, as mucus and albumen, which produce, besides other products, fatty acids also.

I. *Non-drying oils.*

Such oils can only be detected by the elaidine-test. If 4 parts of oil and 2 parts of HNO_3 of 1·20 sp. gr. are mixed in a beaker, and then ½ part of copper-filings are added, N_2O_3 is generated even in the cold, and this effects, without being changed itself, the decomposition of oleic acid ($C_{18}H_{34}O$) into isomeric elaidic acid, a solid white mass, which fuses at +45° C., and volatilizes without change. In case the nitric acid used is too concentrated, the generation of N_2O_3 takes place in so violent a manner that the liquid is frequently thrown out of the beaker. The elaidine reaction is produced also by mixing equal volumes of oil and red fuming nitric acid. The most important of the non-drying oils are :—

1. *Oil of almonds*, sp. gr. = 0·917 to 0·920; it is pressed out of the seed of Amygdalus communis. It has an agreeable mild taste, is clear to light-yellow, and of little consistence. It is nearly inodorous, and solidifies—20°. It is soluble in 60 parts of alcohol, and consists chiefly of olein and margarin.* It has no rancid smell if pure. Poppy-seed oil, cotton-seed oil, peanut oil, lard oil, sesame oil, and sweet oil are found as adulterations. The elaidine-test

* Palmitin and stearin : margarin is not found in nature.—Eds. Am. Chem.

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produces on pure oil, after 3 or 4 hours, a white or light-yellow color. Red color indicates the presence of sesame oil. If the mass is intermixed with oil drops or streaks, drying oils are present. 5 drops of oil with 1 drop of H_2SO_4 render the color turbid and yellowish, but never dark. 5 vols. of oil agitated with 1 vol. of potash lye of sp. gr. 1·34, produce a white liniment. Equal vols. of fuming nitric acid and oil show, on the place where the two liquids meet, a narrow light green zone, which still remains in the elaidine-mass, but which becomes light bluish-green and extended upwards in the presence of only a little olive oil. 6 parts of oil and 1 part of chloride of lime, titurated with a little water, produce a liniment, out of which the oil soon separates again. (Different from poppy-seed oil.)

2 *Olive oil*, sp. gr. = 0·910; it is obtained from the Olea Europæa. It is pale yellow or colorless, has an agreeable taste and smell. It consists chiefly of margarin* and olein.

A few degrees above zero the margarin* crystallizes out and causes the solidifying of the oil. The olive oil, in using the elaidine test, becomes, after two hours, turbid, and after six hours solid and white.† Whilst stirring, this mass crumbles, which in presence of $\frac{1}{20}$ part of poppy-seed oil would become tallow-like, and in presence of $\frac{1}{10}$ of this oil would hardly be more consistent than lard. The solidifying of the elaidine mass commences, if pure oil is used, according to Soubeiran, after 43–59 minutes, in presence of poppy-seed oil after 50 minutes later. If 10 parts of oil are agitated with 1 part of ammonia, a thick liniment results, whilst poppy-seed oil, under the same circumstances, would produce a crumbly mass. Equal volumes of red fuming nitric acid and oil show on their line of contact a beautiful bluish-green ring which is paler on its upper ends. 5 parts of olive oil and 1 part of potash lye of 1·34 sp. gr. form a liniment of the same color as the oil. Adulterations are: Rape-seed oil, linseed oil, poppy-seed oil, madia oil, and cotton-seed oil.

Drying oils are usually recognized by the eladine test. Ethereal oils, which are frequently added to the common cotton-seed oil in order to reduce the duty thereon, float unchanged on the elaidine mass. Sesame oil would color these red. Lard oil solidifies at 4°–5° below olive oil. Hanchecorne gives the following reaction to recognize the pure olive oil. When three parts of olive oil are heated in a steam-bath with a mixture of three parts of nitric acid of 40° and 1 part of water, the pure oil becomes clearer and of a lighter yellow color. If the oil has an admixture of cotton-seed oil, the color will be red. Whilst Pugliese or Gallipoli oils are yellow

* Palmitin and stearin; margarin is not found in nature.—Eds. Am. Chem.

† According to Knapp a mixture of 1 part of N_2O_4 with 33 parts of olive oil solidifies in 70 minutes, with 50 parts of olive oil in 58 minutes; with 100 parts of olive oil in 130 minutes; with 400 parts of olive oil not at all.

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and clear, we find that the Calabria oil has often a greenish color, which may have been caused by an addition of dyes, but likewise by copper. Frequently it is difficult to detect the presence of oxide of copper in olive oil. If the quantity of the dissolved oxide of copper is large, lay a polished iron spatula in the oil, add a little hydrochloric acid, and heat the whole on a water-bath from 3 to 4 hours. A part of the oxide of copper may also be separated from the oil by continued boiling with dilute hydrochloric acid. The liquor is then filtered through thin paper, evaporated to dryness, and ignited; the oxide of copper is dissolved out of the ash by hydrochloric acid and precipitated by ammonia, sulphuretted hydrogen, or ferrocyanide of potassium. But all these tests will in no way give a perfectly sure result, as the oxide of copper was combined with organic acids. To give the quantity of copper, the author considers the following method, which was repeatedly used by him, a practical one. A quantity of oil is weighed, and chemically pure hydrochloric acid is added, it is then heated to boiling over a spirit lamp, and chlorate of potash added. The oil decomposes gradually, and forms, after some time, a frothy mass, solid in the cold. Filter now, neutralize the acid solution partially, and pass in sulphuretted hydrogen gas, whilst heating gently. The resulting precipitate is collected on a filter. The residue of the first filtration is ignited, the copper dissolved out of the ash and precipited by sulphuretted hydrogen. Both precipitates of sulphide of copper are then united and determined in the regular quantitive way. It is a little more simple to saponify the olive oil in which copper is suspected with concentrated caustic lye, to decompose the soap by hydrochloric acid, and separate hydrochloric acid solution by filtering from the oily acids, and to precipitate the copper in the filtrate. But I think this method less reliable than the previous one. Oxide of lead may be dissolved out of the oil by dilute acetic acid, with agitation, and may be precipitated by sulphuric acid.

Rape-seed oil, sp. gr. = 0.910, is obtained by pressure from the seed of brassica napus, brassica campestris, and others. The fresh-pressed oil has a yellow to yellowish green color, and is pretty thick. Only the oil used for burning is refined by sulphuric acid, and contains therefore no mucus, while it is retained by the salad oil. Rape-seed oil is nearly pure oleine, and gives a smeary plaster when boiled with oxide of lead and water. Pure rape-seed oil gives a white mass when shaken with $\frac{1}{6}$ vol. potash lye of 1·34; in the eladine test the oil solidifies after about 5–6 hours. As adulterations have been found: linseed oil, hemp seed oil, and train-oil. When linseed oil is present, the liniment turns greenish with potash-lye, and changes to a yellow brown when heated to boiling. If train oil were present, the color would be red; if hemp-seed oil be present, the liniment will be solid and brown. A very small quantity of train oil may be found by the addition of one drop of sulphuric acid. The drop of

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acid spreads in the oil at once to thread-like stripes, which run undulating to the bottom, and have first a red, afterwards a black color. Rape-seed oil, and hemp-seed oil take a dark-green color, when mixed with equal vols. of sulphuric acid. Even $\frac{1}{1000}$ part of train oil is said to be recognized by the coloring from red to black, when a little syrup of phosphoric acid is added. When 15 drops of rape-seed oil are placed in a porcelain dish and one drop of sulphuric acid is added, a greenish-blue halo, with brown stripes, appears around the acid. When mixed with an equal volume of fuming nitric acid, a brownish-red zone forms at the point of contact, which shades off in greenish hue towards the bottom. If after refining, sulphuric acid is still contained in the oil, it can be detected in the following way. Equal volumes of chemically pure concentrated soda solution and oil are well shaken together, a little NaCl solution is added and again well shaken. When the oil is free of acids, it rises after a few minutes and collects at the top. But when it contains acids, a white emulsion forms at once, which is more or less consistent, according to the amount of acid it contains. But the NaCl solution must be entirely free of caustic lye, because the latter will form an emulsion also with oil, free of acids.

s. *Sesame oil*, sp. gr. = 0.923, is gained from the seed of Sesamum orientale; it is a light to brownish-yellow oil, which does not smell disagreeably; it solidifies at—5°, and is composed nearly entirely of oleine. Boiled with oxide of lead and water, it gives a smeary plaster. When equal volumes of sesame oil and a cooled mixture of concentrated sulphuric and nitric acids are brought together, a bluish-green middle zone ensues. By adding a few drops of bisulphide of carbon, the coloring is of a more beautiful green and remains longer. In the elaidine test the oil solidified and becomes of a yellowish or red color. How to detect sesame oil when mixed with other oils, has been shown before, at the respective places.

5. *Palm oil* is obtained from the green peels of Elais guyanensis. It fuses at + 27°, and consists principally of so-called margarin [palmitin—EDS. AM. CHEM.] and oleine. It becomes easily rancid, and is then less fusible. By heating under admission of air it can be decolorized. With caustic potash it gives a yellow soap.

6. *Lard oil* (so called) can be manufactured, according to Ihlo, by heating 32 parts of rape-seed oil with one part of fine pulverized potato-starch in a sand-bath until a sweet smell comes forth. After cooling, settling, and filtering, a clear, yellowish, agreeably smelling and tasting oil is obtained, which solidifies at +6° to 8°C., and which is used in the manufacture of perfumed oils.

II. *Drying oils.*

When these remain for a long time in contact with the air, they absorb oxygen, become constantly thicker, and finally dry out entirely. Contrary to the non-drying oils, this oxidation is retarded

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by presence of mucus or albumen; therefore, these oils dry the quicker, the more such substances are removed. The drying is accelerated by the addition of metallic oxides, such as oxide of zinc or lead. These oils are used for varnishes and paints. Through the influence of nitrous acid on drying oils, suberic and pimelic acids are formed, amongst others. But the elaidine reaction does not take place, as the linoleic acid is not solidified by nitrous acid. The composition of this acid, which occurs likewise in the poppy seed, is $C_{16}H_{28}O_2$. All drying oils, when boiled with oxide of lead and water, give smeary plasters, which dry out after some time.

1. *Linseed oil*, sp. gr. = 0·930, is obtained from the seed of linum usitatissimum. It is greenish-yellow, has a peculiar smell and taste, is of a syrupy consistence, and solidifies only at—16° to 20°. When mixed with nitrous acid, its color is red. If equal volumes of oil and red fuming nitric acid are mixed in a beaker, the mixture takes first a green color and then a red one towards the upper part. Frequently the reaction is so violent that the liquid spurts out of the beaker. If five volumes of oil are mixed with one volume of potash lye of 1·34, and then strongly agitated, a greenish-yellow liniment is formed, which becomes fluid and yellowish-brown after boiling. Hemp-seed oil would form under the same circumstances a brown solid mass. If equal volumes of hemp-seed oil are mixed, a greenish coloration results.

2. *Poppy-seed oil*, sp. gr. = 0·913 to 0·924, is procured from the seed of Papaver somniferum. It is yellowish-white, and if old perfectly white, and has an agreeable taste. It is a thin liquid, and if in the bleached state (when it is rancid and in an easily drying condition) may be used in oil painting. The poppy-seed oil solidifies at—18°. Brought in contact with an equal volume of red fuming nitric acid, a dark green middle zone is formed, changing into pink in its upper layers. 84 volumes of poppy-seed oil, triturated with one part of good chloride of lime, furnish a liniment, out of which it is very difficult to separate the oil. (Difference from oil of almonds.) When ten parts of poppy-seed oil are mixed with from 2 to 3 parts of sulphuric acid, a pure yellow coloration of the liquid ensues in the beginning, and after stirring some time it changes to brown olive-green, producing at the same time an increase of temperature. Maumene has given a detailed explanation of this phenomenon. If 50 grms. of oil are agitated with 10 c. c. sulphuric acid of 66° B., the temperature increases in case of a mixture of poppy-seed oil and olive oil from 70° to 80°, in case of pure olive oil only about 42°, elaidine test does not influence the poppy-seed oil, and occurring adulterations with non-drying oils may in this way be easily detected.

3. *Castor oil*, sp. gr. 0·950 to 0·970, is produced from the seed of Ricinus communis. The castor oil contains two fatty acids, the ricinostearic acid and ricinoleic acid, together with oxyde of glyceryl

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and a resin. Œnanthol results from the dry distillation, and during the oxidation by HNO_3, œnanthylic acid is formed. When heated with hydrate of potash, caprylic alcohol is formed, and sebacic acid. If before the pressing the peels are removed from the seed, the resulting oil is a colorless one; if the seeds are roasted, a yellow oil is obtained. The American oil has a larger percentage of ricinostearin than the West Indian and French oil has, and becomes at a comparatively low temperature thick and turbid. The oil is of a syrupy consistency, colorless or slight yellow, and transparent. Its taste is mild in the beginning, afterwards a little sharp. Exposed to the air it becomes rancid and dies out. It soldifies at—18°, and readily dissolves in absolute alcohol. If three parts of castor oil are dissolved in an equal volume of bisulphide of carbon, and two parts of crude sulphuric acid are slowly added, the castor oil separates as a slimy, reddish-white mass, which is insoluble, even in an excess of bisulphide of carbon, unless washed. In the elaidine test, this oil becomes first of a whitish color, and solidifies after 6—8 hours to a wax-like mass (ricinoelaidin). As adulterations, we find sesame oil and sunflower oil. In this case, the oil in the elaidine test is yellowish, reddish, or red in the beginning, and afterwards a soft, yellow, or brown mass. Pure oil is perfectly soluble at $+30°$, $-35°$, in an equal volume of alcohol, but as soon as it contains more than 5 per cent. of other oil, the solution is turbid.

The following scheme gives the tests which are most in use. The reactions enumerated will take place with exactness only in the presence of non-adulterated oils; but in most cases, when the mixture is not too complicated, will be sufficient to determine an oil. The potash lye which has to be used must be prepared from chemically pure potash. The red fuming nitric acid used by the writer of this had a sp. gr. of 1·40. To determine the sp. gr., the elometers made by the academical optician Desaga in Heidelberg, may be used-

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Scheme for the Analysis of Fatty Oils at Ordinary Temperatures.

5. vols. oil mixed with 1 vol. potash lye of 1·34 and strongly agitated. The mass is—	Snow white. Oil of almonds, very good rape-seed oil, bleached olive oil.	Yellowish Poppy-seed oil, olive oil, rape-seed oil, sesame oil.	Greenish. Linseed oil, hemp-seed oil, oils containing Cu, and artificial dyes.	Pink color. Refined rape-seed oil.	Brown and stiff, Hemp-seed oil.	Yellowish brown and fluid, Linseed oil.	Red. Train oil.
Mix in a beaker carefully equal vol. of oil and red fuming nitric acid. A middle zone forms on point of contact. This is—	Narrow and light green; oil becomes flocculent and opaque. Oil of almonds.	Dark green; pink above Poppy-seed oil.	Broad and beautiful light blue-green. Olive oil.	Brown-red. Cod-liver oil.	Green, red above Linseed oil.	Brown-red, greenish below Rape-seed oil.	The oil colors throughout red, after some time. Linseed oil.
Mix in a beaker the oil with concentrated sulphuric acid. Layers where oil and acid meet are colored—	10 drops of oil, 2 of concentrated sulphuric acid.			Equal volumes oil and acid.			
	Beautiful green, with brown stripes. Rape-seed oil.	Yellow; after agitating, brown and olive-green. Poppy-seed oil, madia oil.	Red, soon changing to black, stripes undulating through the liquid. Train oil.	Without bisulphide of carbon. When agitated, fine dark green, Rape-seed oil.	Green. Linseed oil, Hempseed oil.	Red Train oil.	With bisulphide carbon. With 20 times its vol, CS_2, splendid violet, quickly changing to brown coloration train oil.
In the eladine test the oil mass is—	Solified, crumbling, and white Olive oil, oil of almonds, bleached rape-seed oil.	Solidified, crumbling, and yellowish. Rape-seed oil.	Solidified and red. Sesame oil.	Wax like and white. Castor oil.	The eladine mass shows oil drops and *stripes*. Oil mixtures containing drying oils.	Unchanged. Linseed oil, Poppy-seed oil, nut oil.	Ethereal oils, added to the olive to correct the smell, float on the elaidine.
In boiling with water and oxide of lead a plaster is formed, the consistance of which is—	Solid. Olive oil.	Smeary. Rape-seed oil, oil of almonds, sesame oil.	Smeary, but drying after some time. Drying oils.				
Solubility of 1 part oil in alcohol:	1 : 1 Castor oil.	1 : 25 Poppy-seed oil.	1 : 30 Hemp-seed oil.	1 : 40 Linsee oil.	1 : 60 Oil of almonds.		
Specific gravity of oils is—	0·913 Poppy-seed oil, and oil of brass nap.	0·914. Oil of almonds, oil of brass. camp.	0.918 Olive oil.	0·923 Sesame oil	0·924 Sunflower oil.	0·950—0·970 Castor oil.	0·930 Linseed oil
No. of degrees Celsius at which the oils change from solid to liquid state:	—27° Hemp-seed oil.	—18° Castor oil. +2·5+6° to +8° Olive oil, lard oil.	—16° to —20° Linseed oil. —20° to —25° Oil of almonds.	—16° Sunflower oil.	6° Oil of brass. napus.	—40° Oil of brass. camp.	—5° Sesame oil.

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THE THERAPEUTICAL VALUE OF THE SULPHIDES.*

An excellent article is contributed to the *Lancet*, February 21st, by Professor Sydney Ringer, on the sulphides of potassium, sodium and calcium. He says :

I wish to call attention to the value of sulphides, present in many natural waters, in abscesses, boils, and scrofulous sores. The influence of the group on the suppurative process is easily made manifest. Thus when sulphide of potassium or calcium is administered, a thin, watery, unhealthy discharge becomes at first more abundant, afterwards diminishing, and throughout continues thicker and healthier, possessing indeed the characters of " laudable" pus. The condition of the sore improves correspondingly, and its healing is promoted.

Their efficacy may be frequently demonstrated in cases of the following kind. An unhealthy child, from six to twelve months old, suffers from a slight sore throat, perhaps occurring in scarlet fever or measles. The sore throat produces considerable enlargement of the glands behind the angle of the jaw. The swelling, of stony-hardness, may be sufficiently large to interfere with swallowing and to push the head on one side. Suppuration takes place, but is very deep-seated, and for a long time there is neither redness of the skin nor fluctuation, and the pus very slowly makes its way to the surface, so that a fortnight, three weeks, or even a month may elapse before the abscess bursts, or is fit to be opened, when a deep hole is left, with considerable induration around it. The pain and constitutional disturbance are so great that the child sometimes dies; and even if this termination is averted, the deep discharging hole heals very slowly, owing to the indurated and unhealthy state of the adjacent tissues. If a tenth of a grain of sulphide of calcium, mixed with a grain of sugar of milk, is given in such a case every hour or two hours, the results are most striking. The swelling becomes smaller, the pus reaches the surface in four or five days, and when it is evacuated leaves a benign wound which quickly heals. The effects of these remedies are equally conspicuous in mammary abscesses, although in rare instances they appear temporarily to increase the pain, a remark which seems sometimes to hold good with respect to boils. But as a rule the pain is speedily mitigated. Singular to say, I have found these remedies of much less use in forwarding the maturation and expulsion of pus in indolent buboes, but my experience of their use in buboes has been but small.

In boils and carbuncles these remedies yield excellent results. A tenth of a grain of sulphide of calcium, given every two or three hours, generally prevents the formation of fresh boils, while it lessens the inflammation and reduces the area of the existing boils,

*Phila. Medical and Surgical Reporter.

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and quickly liquefies the core, so that its separation is much more speedy, thus considerably curtailing the course of the boil. Where the skin is not yet broken, and the slow-separating core therefore not yet exposed, the sulphides often convert the boil into an abscess, so that on bursting pus is freely discharged, and the wound at once heals. These remedies meanwhile improve the general health, removing that debility and malaise ordinarily so markedly associated with these eruptions. In some cases, however, as in the deep-seated boils and abscesses of diabetes they are powerless. In carbuncles the sulphides will generally be found equally serviceable, melting, as it were, the core into healthy pus, and so quickly expelling the dead and otherwise slow-separating tissue. In abscesses and carbuncles it is useful to apply belladonna over the inflamed part to reduce inflammation and allay pain. The skin should be thickly smeared with equal parts of belladonna and glycerine, and over this a poultice applied, renewing the belladonna each time the poultice is changed. Poultices, however, being liable to bring out a fresh crop of boils, one of the following plans should be adopted: Smear belladonna ointment some distance round but not over the boil, and then apply a poultice, the greasy application thus protecting the neighboring tissues. Or, still better, apply a belledonna or opium plaster on leather, with a hole the size of the boil around the swelling, and through the opening smear glycerine and belladonna, covering all with a small poultice. The leather plaster efficiently protects the surrounding skin and averts the production of fresh boils.

I have thought it worth while to mention these useful plans of protecting the boil; but it is scarcely necessary to observe that whilst investigating the effects of sulphides, I have employed them alone, or at most sometimes using only a poultice. The good effects of sulphides are conspicuous in certain scrofulous sores not uncommonly seen in children.

The sulphides appear to me to exercise a very beneficial influence in suppurating scrofulous glands in the neck. Here, again, they hasten the elimination of the pus, and subsequently the cheesy scrofulous matter. After the abscesses have burst, and continued slowly discharging a scanty, unhealthy pus, and when the edges of the sores have become much thickened and indurated, these remedies render the discharge more abundant, thick, creamy, and unhealthy, considerably hasten the evacuation of the scrofulous matter, which prevents the healing of the wound, and at the same time softens the round indurated edges, so that the sore heals much more speedily. If small doses appear to affect these sores but little, larger doses, as half a grain or a grain, should be given several times a day, or even every two hours. I need hardly say that to compass the results described the treatment must be continued several weeks, for it is vain to expect them to occur in a few days, when the sores have been discharging perhaps for months or even years.

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NEW THERAPEUTIC REMEDIES.

At a recent meeting of the Medical Society of the DublinCollege of Physicians, Dr. Walter G. Smith read a very interesting paper from which we make the following extracts, taken from a report published in the *Chemist and Druggist* :—

The lecturer classified the various new remedies under the following divisions :

I. *Alkaloids and active principles ;* guarana, methyl-strychnia, emetia, apomorphia, ergotin.

II. *Hydrocarbides and their derivatives :* xylol, bromoform, iodoform.

III. *Alcoholic Compounds* : Nitrate of amyl, bromal, chloral, croton chloral, propylamine (so-called.)

Guarana—This drug is an example of an old remedy re-introduced, for it was first noticed as far back as 1817. In connection with its medicinal action, it is worth remembering that its active principle, the so-called *guarania*, is identical with the well-known caffeine or theine, a base which occurs also in Paraguay tea (Matê) and in the kolanut of West Central Africa. Guarana is practically nothing but a convenient channel for the administration of impure caffeine. Curiously, the five genera in which caffeine is known to exist belong each to a different natural order.

Methyl Strychnia—This remarkable body, $C_{21}H_{22}N_2O_2^1CH_3HO$ is not only interesting in itself, and as a specimen of a now numerous class of organic substances, but is more especially noticeable as an illustration of a recent and novel method of inquiry, which can scarcely fail to bear important fruit. I refer to the study of the connection between chemical *constitution* and physiological action—a subject which has been so successfully prosecuted by various observers, notably by Crum Brown and Fraser, in Scotland, and by Pellisard, Jolyet, and Cahours, in France.

Brown and Fraser have shown that the *addition* of various organic radicals—*e.g.*, methyl and ethyl—to the molecule of some highly active bodies, such as the alkaloids, without destroying or altering the chemical integrity of the body, effects most extensive and unexpected changes in their physiological action. Iodide of methyl is inert in itself. For example, this very body, the hydrate of methyl-strychnium, produces a condition exactly the reverse of that produced by strychnia, and, in fact, instead of causing muscular spasms, due to increase of reflex excitability of the cord, it actually paralyses the peripheral terminations of the motor nerves, and it has accordingly been suggested as an antidote to strychnia poisoning. 0·1 gr. of hydrochlorate of strychnia caused death in a rabbit in half an hour, while 30 grs. of iodide of methyl-strychnium (containing 21·1 grs of strychnia), previously administered to the

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same rabbit, produced no effect whatever. In other words, more than two hundred times the amount of strychnia can be administered with impunity in the form of the ammonium base than as any of the ordinary salts of this alkaloid. The ammonium bases of brucia, thebaia, codeia, morphia, nicotia, and atropia, have also been examined with the like startling results.

In the case of atropia, the poisonous activity of the base, instead of being so enormously diminished, is considerably increased, so that we cannot formulate any law as to quantitative alteration of toxic energy. Interesting as these researches are, too extreme importance should not be attached to them, and they throw little light upon the question of the respective actions of the different alkaloids.

Emetia—This substance is noticed in conjunction with the next, apomorphia, because they are the only two bodies which can be fitly employed subcutaneously as emetics. As in the case of ergot, we should distinguish pure emetia, *i.e.*, the alkaloid, 15s per 3j., from the preparation sold in France under the name of "coloured emetin," which is nothing but a brown extract, and is 12s per ounce. Pure emetia is at least three times as strong as the impure, and is recommended as a safe, rapid, easy, convenient, and agreeable form of emetic. The dose by the mouth is from 1-18 to 1-6 gr., and subcutaneously, about 1-30 gr. (1 in thirty water, with a little sulphuric acid.) Its solubility in water is 1 in 1,000. Its salts are uncrystallisable, and are very soluble in water.

Apomorphia—The alkaloids are steadily and deservedly gaining confidence every day, and atropia, morphia, strychnia, quinia, &c., are counted our most trusty remedies. But hitherto we have been restricted to bases derived directly from the plant, and apomorphia is the first example of an alkaloid introduced into medicine which has been derived by decomposition from a pre-existing and well-known alkaloid, *i.e.*, it is a product, and not an educt.

The ordinary emetics are usually bulky in dose, uncertain in action, and are apt to produce depressing nausea and prostration, and apomorphia opportunely presents itself as a convenient and unirritating emetic, the one of all others which acts most speedily, and with least trouble to the patient. It is prepared by heating morphia for two or three hours with excess of hydrochloric acid; or, similarly, from codeia, which is methylmorphia. The free base is unstable, and, originally white, turns green immediately on exposure to air. The hydrochlorate is more permanent, but even its watery solution begins to alter in a few minutes, and rapidly passes from an aquamarine tint to an emerald green colour, and ultimately becomes opaque. The physiological effects of the coloured solution are said to be similar to those of the recent solution, but it is less powerful, and is more irritating to the skin. 1-30 to 1-20 gr. is a suitable dose for hypodermic injection. A solution of 1 gr. in 200 minims of

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water is a convenient formula. Occasionally giddiness, cerebral oppression, and præcordial anxiety have followed its use.

Apomorphia offers special advantages in dealing with refractory children, insane people, or with adults in some kinds of poisoning, when coma or delirium hinder oral administration. The only drawback is its costliness, and at present 3j costs £1—*i.e.*, 4d a grain.

In illustration of its effects I will mention two cases in which I have employed it. Some time since I injected 1-30 gr. of apomorphia from a green solution into the arm of a woman at the Adelaide Hospital. In ten minutes the stomach turned without causing her pain or distress. On December 6th I injected 1-20 gr. of apomorphia from a fresh solution into the arm of a patient suffering from spasm of the œsophagus, an affection to which he has been occasionally liable since an attack of cholera in 1867. He was of a peculiarly placid and unexcitable temperament. Five minutes after the injection the pulse had risen from 70 to 104, and he complained of a sensation of heat in the head and of nausea, which rapidly increased. In ten minutes he was inclined to be sick, but could eject nothing, and there was a sudden call to stool. The bowels were moved a second time in five minutes more: motions thin, copious, and very offensive. After the expiration of twenty minutes the pulse had fallen to 56; he was sleepy, pale, and felt and looked much prostrated. Within two hours he had completely recovered. No effect was produced on the œsophageal spasm, which was absolute and complete for a period of 122 hours, when the "stomach opened" after a long continuance of retching, and he was able to swallow some food.

Apomorphia is a striking instance of the assistance which scientific chemistry may, and does, lend to therapeutics, and it establishes another link between chemistry and medicine. Moreover, it evinces the radical alteration produced in the physiological action of a substance by instituting an *apparently* slight change in its molecular constitution. In this particular case, the withdrawal of a molecule of water causes such a re-arrangement of the atoms that we obtain new and unlooked for results, for apomorphia, $C_{17}H_{17}N_2O$= morphia, $C_{17}H_{19}NO_3$, minus water, H_2O.

Ergotin.—No better example than this can be brought forward of the confusion which results from the same name being applied to several distinct substances, or from a definite term being affixed to a body of unknown or uncertain composition. There are no less than three totally distinct substances included, under the common designation *ergotin*, viz:—Wiggers' ergotin (1831), Bonjean's ergotin (1840). and Wenzell's ergotin (1864).

1. *Wiggers' Ergotin* is prepared by acting upon the spirituous extract of ergot, previously freed from fat with water, whereby the reddish-brown powder is left behind. It has a bitter taste, and is insoluble in water and ether, and difficulty soluble in spirit. Like

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Bonjean's preparation, it is an impure substance. In doses of from 3 to 7 grs. it gives rise to a nauseous bitter taste, followed by a confused feeling in the head, running on to headache, dilation of the pupils, fall in the pulse, and abdominal pain; 7 grs. caused a further sensation of dryness in the throat, lasting for several hours. It costs 5s per drachm.

2. *Bonjean's Ergotin*—Prepared by exhausting the watery extract of ergot with spirit of wine, and evaporating the spirituous solution. It is a brownish-red extract, with a peculiar odour of roast meat, and a sharply bitter taste. It is completely soluble in water and spirit, and is evidently a complex product. Its action appears to be similar to that of Wiggers' ergotin. Cost, 1s. 6d. per ounce.

Wenzell's Ergotin—According to Wenzell, ergot contains two alkaloids, ecboline and ergotine, which can each be obtained as an amorphous, brown, feebly bitter powder, easily soluble in water and spirit, insoluble in ether and chloroform. The property of exciting contraction of the uterus is stated to reside in the ecboline, but this statement needs confirmation. These bases seem to rest upon a slender foundation, their relations to Wiggers' and Bonjean's ergotins is not determined, and, in short, as matters stand at present, it is impossible to give a satisfactory answer to the question—what is the active principle of ergot?

II.—Of the second group little need be said, further than to point to the specimens on the table.

Xylol had a very short-lived run in the treatment of small-pox, in which it was administered in capsules, in doses of 10 to 15 m. It belongs to the small but important group of bodies known in chemistry as the aromatic hydrocarbides, from the agreeable odour of some of their compounds, *e.g.*, essence of bitter almonds. The first term of this homologous series is the familiar benzine or benzol, C_6H_6, and above this are five higher terms, the third of which is xylene or xylol, C_8H_{10}.

Its name is derived from a Greek word signifying wood, because it was first found among the oils which are separated from crude wood spirit by the action of water.

When we consider the importance of the group of hydrocarbides to organic chemistry, and call to mind that they are hundreds in number, exist in every variety of form, and with every variety of properties, thus constituting in themselves a compact and symmetrical range of series, mutually connected by simple laws, it seems strange how little medicine has borrowed from them, for, with the exception of the terebene series, including oil of turpentine, and its numerous isomers, oil of juniper, oil of lemon, &c., it has not yielded much to the stores of therapeutics.

Chloroform, $CHCl_3$—*Bromoform* $CHBr_3$—*Iodoform* CHI_3.

These three bodies afford additional confirmation, were that

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needed, of the remarkable gradation of properties which exists between their halogen parents, Cl, Br, and I, and which extends throughout the majority of their combinations.

Thus Cl is a greenish-yellow gas.
Br is a red liquid.
I is a dark solid.

So we have—
$CHCl_3$—a colourless liquid.
$CHBr_3$—a reddish liquid.
CHI_3—A sulphur-yellow solid.

Bromoform is less volatile than chloroform, more easily decomposed by alkalies, and appears to enjoy much the same properties as iodoform, but it is irritant, and does not appear likely to fulfil any useful indications in practice.

They are all prepared in an analogous manner. *Iodoform* contains 90 per cent. of iodine, and yet its taste is mild and non-corrosive. It is not new, for it was discovered in 1823, and has been long in use on the Continent. There is much evidence in its favour, and from its non-irritating action, ready absorption, and peculiar anæsthetic effect locally, it seems surprising that it has not come into more general use. Dose ½ to one grain.

GHAZEEPORE ROSE-WATER.*

The following interesting information on the cultivation of roses and the preparation of rose-water at Ghazeepore has been taken from the Catalogue of the Indian Department at the Vienna Universal Exhibition, for which it was written by Mr. R. Saunders.

"The roses from which the celebrated Ghazeepore rose-water is distilled came originally from Bussorah. These roses were first transplanted from Persia, and brought to the ancient, but now ruinous, Hindu city of Kanauj on the Ganges, and thence to Ghazeepore.

Somewhere about a century ago, Shaikh Abdullah (the father of the last Nawab Fuzl Alee Khan) made the first trial of a rose plantation in the vicinity of the city of Ghazeepore. Having experimented on a very limited scale in his own garden, he discovered that the soil of the evirons of Ghazeepore was admirably adapted for rose cultivation, and since that period it has by degrees been extended.

The celebrity of the Ghazeepore perfumes prepared from these roses very soon spread throughout India, and to other countries, while to this day they have been held in the highest possible esteem on account of the permanence of the odour, and the peculiar delicate

*Pharm. Journ. & Trans.

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fragrance of the scent for which they are specially appreciated in the mercantile world. Year after year traders come from immense distances to work temporary distilleries, for the season only, in order to replenish their stock of these delicious and precious rose-scents.

Culture of the Roses, and Plantation of Rose Gardens.—Unlike the propagation of the specimen roses of England which depend chiefly on grafting, these rose trees are raised from cuttings which are planted out from nurseries after one year's growth at an expense of Rs. 25 per beegah. These slips are watered every five or six days till the setting in of the rains, and when once they have taken root they are finally transplanted to the field intended for the rose-garden. Here each rose tree is planted three feet apart from the other, and on an average 1000 shrubs are allowed to grow in each beegah of land.

Rose fields are kept scrupulously clean by constant weeding, and loosening the soil around the roots. This operation takes place about three times a year. Leaf-mould, which is the best sort of manure for roses, is sprinkled all over the fields once a year, and twice a year the fields are irrigated by flooding them with well water. Priming takes place annually in the month of January. The flowering season is in February and March, when the blossoms are picked and collected each day before sunrise.

The average yield of flowers per beegah is from 30,000 to 60,000. These are sold to the distillers at a rate varying from 100 to 120 rupees per lakh (hundred thousand) of flowers. The total area under rose cultivation in Ghazeepore is estimated at about 200 acres, bearing an average rental of Rs. 4 per beegah.

Process of Manufacturing Pure Attar of Roses.—A gallon, or half gallon, of the best rose-water is kept in a large copper vessel in the cool night air, with a thin cotton covering over it. Before day-break the oily extract floating over the surface of the water is carefully collected with a pigeon's feather and placed in a phial.

The next day fresh flowers are added to the water, and it is again distilled, and the same process is continued for several days successively, till as much pure attar of roses is collected as is required. The whole quantity thus collected is kept in a phial and exposed to the sun for a few days, and as soon as the watery particles have evaporated pure oil, or attar of roses, is left in the phial, which sells by weight at Rs. 100 to Rs. 125 per toolah. This sort of attar being costly is generally made only to order, and the ordinary quantity produced each year rarely exceeds five or six toolahs. The rose-water left after eight or nine distillations again comes into use, and is sold in the market as the best of its kind. It is, in fact, a clear profit to the manufacturer, who is already amply repaid by the attar itself. The prime cost of a toolah of attar is fairly estimated at Rs. 72, viz :—

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Cost of labour.....	Rs. 12 0 0
Value of 50,000 rose flowers at 120 per lakh	Rs. 60 0 0
Total.....	Rs. 72 0 0

The margin left to the manufacturer after covering the cost of interest on outlay does not fall far short of 40 or 50 rupees per toolah which it must be admitted is not at all a bad profit on the transaction.

Manufacture of the Alloyed or Ordinary Bazaar-sold Attar.—Sandal wood is well pounded and mixed with water, and then subjected to the usual process of distillation with roses. This gives a greater quantity of oily substance than could be expected from roses only. The same water is distilled over and over again with an additional quantity of fresh flowers as many times as suits the fancy of the manufacturer.

The value of this attar rises in proportion to the number of distillations, and the best of the kind sells at Rs. 10 per tolah down to the lowest rate of Rs. 2 for the inferior sorts. The process of collection of this attar is the same as that of the other, the only difference between the two being in the admixture or not of sandal wood oil.

It is difficult to estimate with any degree of accuracy the quantity of alloyed attar annually produced in Ghazeepore, for a large number of outsiders come every year, stop for the season only, and then carry off what they produce. Probably a maund would be near the mark, but the value cannot be accurately computed, owing to the great variety of rates for the different qualities manufactured.

Manufacture of Plain Rose-Water.—The process is simple, but the varieties are great according to the number of flowers allowed to each distillation. The ordinary rose-water is sold in huge spherical glass receptacles called "karabas," each containing 14 quart bottles. The average selling price of ordinary rose-water varies from Rs. 2 to 12 per karaba, and English quart bottles from 8 annas to 8 rupees each.

The usual cost of labour for each distillation yielding 24 bottles is one rupee. During the season numerous temporary rose-stills are worked by traders from different parts of India. Consequently it is very difficult to make even an approximate estimation of the actual quantity produced, but it is supposed to be somewhere between two and three hundred maunds.

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Editorial.

PATENT MEDICINES.

The trade in patent medicines may be regarded as one of the institutions of America. Of all places on this wide earth it seems best fitted for the growth and development of this species of imposition. Transatlantic countries may boast of names standing high in the annals of empiric fame, but they cannot show the mountains of wealth, the mighty influence, or the millions of subjects over which the princely potentates of quackery preside on this side of the water. To the United States must be awarded the palm; there the system flourishes in unrestrained luxuriance. Nor is Canada far behind, at least as far as devotion to the cause is concerned. The field of operations is, necessarily, much smaller, but the desire to quack and be quacked is not the less ardent; and though we have, so far, been in great part dependent on the Americans for the wherewithal to foster this spirit, we are fast merging into a position of independence, and no doubt will shortly be able to claim a fair second place.

That this branch of native industry is rapidly progressing we are all well aware, and however reluctant we may be to acknowledge it, the home-made patent medicine man is becoming a great fact. His origin is by no means obscure; one can day by day watch the various stages of development. We have especially marked three classes from which these persons originate. First, the druggist—if druggist he may be termed—ignorant, incompetent, impecunious and of great greed. Unable to take the position which his name would imply, and possessing neither the confidence of physician or patient, he naturally drops to the level of quackery. A few bills, stealthily posted by his own hand, announce the discovery of an universal panacea, a sarsaparilla, an elixir, pain killer, or what not. An advertisement in the local paper; by-and-by a travelling agent, who, paint brush in hand, bedaubs his message on every fence, and he next arrives at the dignity of an equipage by which his wares are vended from town to town. Now the stage of more extended advertising is reached, and anon comes the period

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of the inevitable almanac. This bait speedily brings more fish to the net, and the success of your medicine man may now be accounted certain.

Next we have the practitioner of medicine, whose avarice will not allow him to keep the legitimate channel. A very similar man is he to the druggist; but, by reason of his training, with enlarged capacity for rapaciousness; more specious and pretentious. In most countries, lapses of this kind are met with professional ostracism, but, in Canada, this is by no means an inevitable sequence; it does not, indeed, require any severe exercise of memory to recall instances of dealers and originators of bitters, female pills, and the like, who have been chosen to fill high official medical positions.

The itinerant quack, who has generally been a jack of all trades, may, to all intents and purposes, be considered an adventurer—to-day a book agent; next a doctor, haranguing the market crowd about the virtues of his lightning oil; and perhaps to-morrow explaining to a reluctant listener the intricacies of life insurance, after the irrepressible manner of his class. This man is a comparatively harmless member of the fraternity; his business is generally of the most limited kind, and seldom do his changeful nature and often irregular habits permit him to continue long enough in any pursuit in order to meet with success. However, from these classes are the ranks of our patent medicine proprietors recruited. From these arise the mighty houses, wrapped in the impenetrable armour of wealth, which promulgate with impunity millions of lies, deceiving the ignorant, deluding the unwary, and preying on the lives of suffering humanity.

The question may be suggested,—if the patent medicine trade is as bad as this, how is it that the public give it such a willing support? they demand such medicines and must be satisfied. We answer, the public are educated, deluded and importuned into the belief; and, moreover, the class of persons affected, are either the sick or their sympathizing friends. A drowning man will catch at a straw, and when these so-called remedies are so speciously heralded, it is little wonder that the weary sufferer will grasp after a fancied relief; too often, indeed, to find that there is nothing in his hand.

For this popular delusion the press is chiefly to blame; seldom

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can we take up a paper without finding some humbug blazoned forth and extolled ; generally by a self-blown trumpet, or at least by one whose every blast is purchased. Strangely enough these advertisements and puffs are mostly to be found in papers of a directly opposite character. Side by side with the pandering sentimentalism and filth of the vilest weekly, we find the column of quackery ; and do we search our religious organ, we find the holy and unholy strangely mixed together. The former often wages an unequal warfare with the latter, for the falsehoods of the nostrum vendor have generally the preponderance of space. Why these two classes of papers should be chosen we cannot tell, without it is that the advertisers assume the truth of the assertion that the world is made up of but two classes—the knave and the credulous.

The subject of our remarks has been suggested by a few hours ago receiving, from two unmitigated quacks, an offer of advertisements for this journal. One of these so-styled doctors would inform our readers that he is in possession of a certain cure for consumption and all diseases of the throat and lungs ; the other guarantees that by his medicine the epileptic will find sure and permanent relief. Either of these generous individuals will send to any one making the application, a trial bottle of medicine, free of charge. What the particular " dodge " in this instance is, we are not prepared to say, but there can be but one general conclusion—that it is a swindling operation of some kind, and from the extent of the advertising, that it is found to be a delusion of the most profitable description.

As to the means which should be used in order to check this rapidly increasing evil, we cannot do better than quote from an excellent article which appeared in one of the last numbers of the *Medical News :*

" Moral means are probably the only effective ones that are left open to be exercised in this country. It is incumbent, first of all that, physicians and surgeons should set their faces against the use of any quack nostrum, and this must be done without any appearance of self-interest. If we go into a house and find that some proprietary pills are being made use of as a family medicine, it will be well to advise the use of the compound rhubarb pill of the pharmacopœia, or some other suitable and legitimate medicine, which may be more cheaply obtained from a respectable druggist than the quack nostrum. In this quiet way much may be done by medical men themselves to check an evil from which undoubtedly they are

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made to suffer. Then the clergy and the editorial and newspaper publishing professions have to be acted upon. Clergymen must be made to feel that their church organs are taking the devil's money in the pay of the quack advertiser; and that the position and influence of their religious newspapers are perverted by being made the vehicles of such advertisements. If once the true idea can be inculcated that quackery is cheatery and imposition, and of consequence neither honest nor respectable, and this idea be made to spread, as it ought to do, from the teachers of religion and morality, a great point will be gained.

"It will be more difficult to reach the newspaper publisher, who is of course much influenced by motives of gain, and whose income from advertising must necessarily be largely supplemented by advertising the quack medicines which figure so extensively in the newspapers. But here again the want of respectability must be made to attach to this class of advertising. Some newspapers will not advertise lotteries, partly because there is a law against it, and partly because it is obviously lending countenance to schemes that are often dishonestly managed; and the same odium should be made to attach to the flagitious puffs of the pill vendor.

"Another moral means which may be relied on for checking quackery is the cultivation of the higher and general knowledge of human physiology. The more intelligent we find any class of people, the more ready do we find that class to repose the fullest confidence in the educated and qualified practitioner. It is principally among the ignorant and less intelligent class that the love of quackery prevails. To these people medicine is medicine all the same whether it comes from the shop of a nostrum-vendor or the dispensing office of a medical man; and we can only hope to act upon such people by offering them a different example in the practice of their more intelligent superiors."

Our late contemporary is rather hard on the druggists, but we had, perhaps, better let him tell his own story.

"Lastly, and most hopeless class of all to operate upon, with the expectation of discountenancing the sale of proprietary medicines, we have the druggists. Although brought much in contact with them, physicians have confessedly little influence with druggists. The profits of the patent medicine trade are too great for druggists to relinquish this branch of their business on the mere recommendation of their patrons in the profession. The druggists have much to answer for. In league with the quacks, they often turn quacks themselves. Instead of maintaining cordial relations with doctors, there is too often ground for an antagonistic feeling. We are inclined to give up the druggists with a shake of the head as 'bad cases.' But let us hope that the druggists are not all bad, and that when ignorant and ill-advised people come to their shops

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seeking relief for their ailments in a vaunted quack remedy some of these dealers will be found honest and disinterested enough to take a proper course in recommending their customers to go rather to a qualified practitioner."

In looking over our exchanges we are always pleased to notice any extract from this journal, and we are also gratified if any views we may have advanced meet with the indorsation of our contemporaries. There are, however, certain instances when a little more courtesy, and perhaps a little more honesty, might with advantage be shown. A case in point is that of the *Canada Medical Record.* In the February issue of that journal there appears as its first—and with the exception of some unimportant notes—its only editorial, a lengthy article which appeared in the editorial department of the January issue of this journal. In title and wording it is, as far as it goes, an exact copy, and is only different in having a short paragraph substituted for that concluding the original article. We are glad to find that the editor of the *Medical Record* holds opinions similar to our own, but think that in a case of this kind, a trifling acknowledgment of the fact would not be amiss.

Obituary.

T. N. R. MORSON.

At the time of our going to press with last month's issue we received notice of Mr. Morson's death, and we doubt not but most of our readers will by this time have learned of the sad event. Few names are better known, amongst druggists, than that of Mr. Morson, and the high reputation he attained, both as a man of science and thoroughly reliable manufacturer, will ensure a lasting and respectful remembrance. As editor of this journal we can speak of the many courtesies which we received from Mr. Morson, and remember with gratitude the substantial encouragement he tendered to an undertaking which, in common with others having for their object the advancement of pharmaceutical science, we believe he considered it a duty and pleasure to support.

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For the following biographical notice we are indebted to the London *Pharmaceutical Journal* :—

"Mr. Morson was born at Stratford-le-Bow, in the eastern suburb of London, and received his early education at Stoke Newington. Having lost his parents while he was yet young, and being left without family guardian or connections, he was thrown to a great extent upon his own resources ; but he possessed within himself an endowment more valuable than worldly inheritance. With a mind remarkable for activity and power of perception he overcame the difficulties of his early life, became the founder of a business of world-wide reputation, and formed acquaintance, which ripened into intimate friendship, with some of the greatest chemists and philosophers of the age in which he lived. When only fourteen years of age he was apprenticed to an apothecary in Fleet Market (now Farringdon street), but he had no liking for medical practice, and therefore adhered to the pharmaceutical rather than the medical and surgical part of the business he was placed in. His predilection lay in the direction of chemistry, and this was probably favoured by the circumstance of his being thrown into association with men of kindred tastes, who formed a little society for the investigation of scientific subjects, and whose meetings were held in the neighbourhood of Fleet street. It was here he first made the acquaintance of Faraday, and acquired so strong a bent in favour of scientific chemistry, that he determined to make its application as far as possible the aim of his future pursuits. After the expiration of his apprenticeship he went to Paris, and entered the establishment of M. Planche, a pharmacien, with whom he lived for some years. He thus acquired a thorough knowledge of the French language as well as French pharmacy, and made the acquaintance of men whose friendship he cultivated in later years. He was still a young man when he returned to London and established himself in business as a chemist and druggist in the house in which he had been apprenticed, in Farringdon street, the late proprietor, Mr. Morley, having retired from the retail department; which was previously associated with his practice.

The chemist and druggist of those days was generally a chemist only by name, but not so Mr. Morson. In a little room at the back of his shop was produced the first sulphate of quinine made in England, and the same may be said of morphia. Nor were these operations merely experimental. From entries in his ledger it appears that he supplied sulphate of quinine to a wholesale druggist at eight shillings a drachm, and morphia at eighteen shillings a drachm. His chemical knowledge and manipulative skill were now bringing him into notice, and he was frequently applied to for rare chemicals ; but the premises in Farringdon street did not admit of the cultivation of this branch of the business, which was, neverthe-

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less, the most congenial to his taste. We have heard him say that he would probably have hesitated for many years before engaging more extensive premises (for he was naturally cautious and very averse to speculation), had he not been encouraged and supported in that step by the lady to whom he had just then united himself in marriage, and who with much spirit and judgment added ample pecuniary means. He moved from Farringdon street to Southampton Row, and soon after purchased premises in Hornsey Road, where he built a laboratory for the manufacture of creasote, morphia, and other chemical products. We need not further trace his career as a chemical manufacturer, for in this capacity he is everywhere known, at least by name.

But Mr. Morson's fame has not been merely that of a manufacturer. He was a man of enlarged mind and cultivated intellect. Thrown upon the world in early life, with absolutely no relations, he was, nevertheless, surrounded by men of talent and high position, with whom he associated on terms of mutual friendshlp. He was a member and a regular attendant of the meetings of the Royal Institution, and a prominent member of the Society of Arts. His house was a place of resort for men of genius, where Graham and Fownes as chemists, Robert Brown, Bennett, Bowerbank, and Gray as naturalists ; Muller, Johnson, and Cruickshank as artists ; and Richard Horseman Solly and Captain Bagnold as patrons of science and art, with many others of kindred tastes, found hospitable reception and congenial associations. A Sunday evening in Southampton Row or Hornsey Rise often afforded an opportunity for the social intercourse of men such as those we have named, who found ample scope for the discussion of their favourite topics in Mr. Morson's company.

We have hitherto referred to a time when pharmacy in this country had not yet quickened from the embryo state of its existence prior to the establishment of the Pharmaceutical Society. When vitality began to be manifested among the previourly inert members of the disunited body with which Mr. Morson was associated rather by name than in character, it could not be supposed that he would be an inactive observer of what was passing around him. Accordingly, we find him in the foremost rank of those who originated the Pharmaceutical Society, and there was no one more frequently consulted, or whose opinion carried greater weight among his fellow-workers in the cause of pharmaceutical regeneration. He was constantly appealed to by his friend Jacob Bell on any difficult questions, and articles prepared for publication in the *Pharmaceutical Journal* were often submitted to him, and, to use an expression of Mr. Bell's, were frequently seasoned with the "Attic salt" from Southampton Row.

Mr. Morson, at this period, had an European reputation as a scientific manufacturing chemist, and his character in this respect,

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together with his acquaintance with many of the scientific celebrities of the Continent, as well as his familiarity with the French language, enabled him to render great service to the young Society, in the development of which he took a lively interest.

Distinguished foreigners, attracted by the proceedings of English pharmacists, were generally entertained by Mr. Morson. French was almost as freely spoken as English, not only by Mr. Morson himself, but by the members of his family, who had received much of their education in France ; and here, therefore, might be found, when they were staying in London, those scientific foreigners who took an interest in pharmacy. Guibourt, Cap, Liebig, Mitscherlich, Rose, and many others of similar stamp, have been guests at various times at Southampton Row, Queen Square, or Hornsey, and have been indebted to Mr. Morson for an intimate acquaintance with the Pharmaceutical Society, its provisions and proceedings. Mr. Morson was for many years on the Council of the Pharmaceutical Society ; he was for a still longer period a member of the Board of Examiners, and he used to be a very constant attendant at the evening meetings of the Society. In 1844 he was elected Vice-President of the Society, and for four successive years he continued to fill this office, after which he was made President for a year, and again for about two years in 1859-60.

Mr. Morson retired from the Council of the Pharmaceutical Society in 1870, but his interest in the objects and operations of the Society remained undiminished, and up to the time his last severe illness commenced, he was almost a daily visitor at 17, Bloomsbury Square. His health, however, had sensibly failed for many months before his death, and he often expressed himself as sensible that his end was approaching. In the early part of January he had an attack of paralysis, from which he never recovered. Although he did not live to extreme old age, yet, we may say of him, that the work he was enabled to accomplish has entitled him to be classed among the most distinguished of the pharmacists of this country.

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Editorial Summary.

Dispensing of Hydrocyanic Acid.—Mr. T. Baden Benger, (*Pharm. Jour. and Trans.*) notices various methods which have been proposed for the preservation and dispensing of prussic acid; and also alludes to the late suggestion of Mr. Towerzey—that a metallic cyanide be substituted for the more unstable liquid. This plan is a good one, but it would be some time before physicians could be brought to adopt it. For storing and dispensing the liquid acid the author suggested a simple contrivance which he had found quite satisfactory. It consists, in fact, of a bottle from which the contents may be removed without taking out the stopper. A small glass tube, shaped like the barrel of an ordinary half-ounce syringe, is drawn out to a rather long, fine point at one end, and sealed in the flame of a spirit lamp or Bunsen's burner; it is then filled with the acid and a piece of vulcanized sheet India-rubber tied *tightly* over the mouth. When required for use, the point is scratched with a file and broken off; by pressing the finger on the India-rubber diaphragm any required quantity of acid can be taken out, only the same bulk of air entering the tube when the pressure is removed. It is then placed, with its point below the surface of mercury, in a little upright glass vessel. By this method the only loss of HCN is the small quantity which diffuses in the air contained in the tube as it is gradually emptied, and is not sufficient to be of practical importance. It is of course necessary to bind the India-rubber tightly over the mouth of the tube, which should be of yellow glass, or varnished by a dip in solution of shellac coloured with coralline. Vulcanized India-rubber must be used, as the HCN diffuses rapidly through pure India-rubber. Not the slightest deterioration was found to have occurred in acid so kept for fourteen days. These tubes can be filled and sent out by wholesale houses instead of bottles, and can be as easily re-filled."

Combination of Chloral Hydrate and Camphor.—Mr. J. F. Brown, (*Pharm. Jour. and Trans.*) states some facts regarding the solution of camphor in chloral hydrate. When equal weights of these substances are triturated together a syrupy liquid is produced. A rise in temperature accompanies this change, showing that a chemical reaction of some kind must evolve more heat than sufficient to counterbalance the loss of sensible heat always attending the passage of a substance from a solid to the liquid state. No fumes are evolved. The mixture is unaffected by solution of silver nitrate; is

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readily soluble in alcohol and ether; distilled water converts it into a soft translucent solid, with apparent separation of the constituents. Dr. Paul—editor of the journal above referred to—in referring to Mr. Brown's paper, says that some time since the *Medical Record* quoted from an American source a statement that if camphor be powdered by rubbing it in a mortar with a few drops of spirit, and an equal weight of chloral hydrate added, a liquid is produced which is a valuable local anæsthetic. Mr. Lennox Browne, writing to the *British Medical Journal* (March 7th, p. 304), confirms this statement, and says that it is of the greatest value as a local application in neuralgia. Mr. Browne having employed it during several months, has found great and sometimes instantaneous relief to follow its application in every case. It is only necessary to paint the mixture lightly over the painful part and allow it to dry. The application never blisters, though it may occasion a tingling sensation of the skin. The compound has also been found of great service in the relief of toothache.

Crystallized Glycerin.—In a paper read at a recent meeting of the Liverpool Chemists' Association, Mr. A. H. Mason described the properties and characteristics of crystallized glycerin, as exhibited by a specimen obtained from the patentee. The glycerine was first shown at the Vienna Exhibition, and it was then understood that this crystalline condition could only be insured by absolute chemical purity. From actual examination of a specimen, Mr. Mason thinks that this condition is not necessary to bring the specimen to the crystalline form in which it exists. Being very hygroscopic, atmospheric influence of mean temperature is quite sufficient to liquefy it, and, once liquid, exposure to intense cold will not cause it to congeal. The peculiar mousey odour is present. Contact with calcic oxalate produces slight turbidity, and heated with sulphuric acid and absolute alcohol there is discoloration. The method of production, being patented, is a secret; it commands a fancy price. Its usefulness is questionable; as a chemical curiosity it is interesting.

Diamond Powders for the Toilet.—A writer in the *Pharmacist* calls attention to a variety of this powder, now found in the market, which ought to be discountenanced. It consists of fragments of thin glass, with very sharp edges. The manufacture of this powder is very hurtful to the health, and workmen so employed require to take all the precautions which respirators and other similar contrivances afford. It may readily be

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conceived that when this powder is plentifully dusted on the chignons, curls, and dresses of the ball-room belle, and the belle is set in motion amid the currents of the dance, that these fine particles are given off, much to the detriment of the lungs of the dancers. It is said that one death has already taken place from this cause. The other variety of diamond powder is, according to the author, composed of an inert mineral substance resembling tale, and is not nearly so injurious. The two varieties may be distinguished by throwing samples upon red hot coals; the powdered glass melts, while the mineral powder is unaffected. From a cursory examination of a specimen of one of these powders, sent to us for examination, some years ago, we concluded that it consisted of particles of the fine laminæ of mica, assorted by sifting.

Anæsthetic Properties of Saponin.—From the researches of Dr. Kohler, quoted in the London *Medical Record*, saponin is possessed of marked powers as a local anæsthetic, so that it is possible that it may be yet of service in surgical operations. A solution of saponin, applied externally, produces partial paralysis of the motor and sensory nerve filaments; administered hypodermically, these effects are realized to a greater extent. Saponin exists in many plants, as in the Silenæ—*Saponaria officinalis:* Polygalaceæ—*Polygala senega:* and Sapotaceæ—Cortex monesiæ, a product of the *Chrysophyllum glycyphlœum.*

Adulteration of Sherry.—Of nineteen samples of sherry—eight of them of the highest quality to be procured in the London market—analyzed by Dr. Hassall, not one was to be found the pure and unadulterated product of the grape. All of them contained a heavy percentage of spirit, such as could not have resulted from the fermentation of the juice of the grape, and seventeen of them gave evidence of large quantities of sulphate of calcium.

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Transactions of Pharmaceutical Colleges and Societies.

MONTREAL COLLEGE OF PHARMACY.

The monthly meeting of this College was held on Thursday evening; Mr. H. R. Gray, President, in the chair, and Mr. Harper, in the absence of Mr. Mattinson, acting as Secretary. A donation of two bound volumes of the "Chemist and Druggist," was announced. Dr. A. H. Kollmyer, of the medical faculty of Bishop's College, delivered a very interesting lecture on "Electrolysis." The lecturer before entering upon his subject gave a short history of Electricity itself. He said that the term Electricity is derived from a Greek word, *Elektron*, signifying amber, because it was first noticed by the ancients in that substance, and we are told that Thales of Miletus spoke of this property in amber 600 years before the Christian era; but that no further progress was made concerning it till the beginning of the last century, when new and important facts were discovered relating to it, and that these attracted general attention among philosophers and speedily acquired for it the regular form of a science—a science, indeed, which has since been applied to so many useful and ornamental purposes, and also one which has served in a manner almost to annihilate time and distance, as exemplified in the telegraph.

He then entered upon the discussion of the true nature of electricity, which he defined to be one of the forms of force, and he demonstrated by experiments and diagrams how electricity could be converted into heat, light and the other forms of force, and how it could not only produce motion, but how motion could also produce electricity. He afterwards entered into a description of the three forms of electricity: 1. That excited by friction; 2. Magnetism; 3. Galvanism. He explained the theory of thunderstorms, and described the effects of lightning and of galvanism on both living and dead animals. He described fully the component parts of the various galvanic and voltaic batteries, or piles, as well as magnets, and by numerous brilliant and instructive experiments he was enabled to decompose water and effect other chemical changes and decompositions in bodies. He then spoke of the numerous discoveries of metals by Sir Humphrey Davy by the aid of this means of decomposition; that this philosopher had proved that potash, soda, lime, &c., were not the simple bodies that they had up to that time been regarded, but that they were in reality compounds of potassium, sodium, calcium, &c., with oxygen gas, whose disunion he effected

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by elecfrolysis. Through its instrumentality chemists have been enabled to become acquainted with the true nature of the many other elementary bodies, and new fields have opened up for investigation, and he felt certain that new and important discoveries will yet be made. The study of electricity in its different forms, he remarked, had charms and attractions about it scarcely possessed by any other branch in science, and most undoubtedly unsurpassed by any in the brilliancy, variety, grandeur, as well as in the utility and usefulness of the results. The experiments throughout were of the highest order, most interesting and instructive, and the lecturer concluded by thanking Dr. Shaw and Mr. Anthony Kerry for their assistance in enabling him to demonstrate the various points under consideration.

A vote of thanks, proposed by Mr. Mercer, and seconded by Mr. Saunders, was given to the lecturer and the meeting then adjourned.

This meeting concludes the monthly meetings of this session. It was a subject of remark that the unnecessarily late closing of the drug stores kept many young men from availing themselves of these lectures.

The generality of clerks in the drug business, are sadly wanting in scientific training, and it is astonishing that those who are so fortunate as to hold situations in the two great centres of Canada, do not make greater exertions to avail themselves of the excellent opportunities presented to them for improvement. We have seen the grossest ignorance of scientific facts displayed by assistants in some of our leading pharmacies, which, were we to expose in these columns, would almost dishearten those amongst us who are working and hoping for a better state of things.

Practical Formulæ

Dark Brown Hair Dye.—The following is a good dye:

No. 1.

℞ Acid. Pyrogallic..... gr iv.
Aq. Destill ..... ℥ij.
M.

No. 2.

℞ Arg. Nit. Cryst..... ..... ℥j.
Gum. Acaciæ ..... ℥j.
Aq. Destill .... ℥ij.
M. s. a.

—*Pharm. Jour. and Trans.*

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Lubricator.—Stir together at a boiling heat one litre petroleum, 88 grams graphite, 3 grams beeswax, 9 grams tallow and 3 grams caustic soda.

Glycerine and Cantharides Lotion.—

Rosemary water .....One Pint.
Aq. Ammonia .....One Drachm.
Tincture Cantharides .....Two Drachms.
Glycerine .....One half Ounce.

To be used with a sponge or soft hair-brush twice a day.

Registrar's Notice.

THE REGISTER OF THE ONTARIO COLLEGE OF PHARMACY.

As the period of closing the Annual Register of the College is approaching, the Registrar takes the opportunity of reminding those members who have not already sent in their registration fee for 1874, that it is prescribed by the Act that all Chemists and Druggists in business shall, on the first day of May, pay to the Registrar the sum of four dollars; and also that, on the fifteenth day of June of each year, the Registrar shall cause to be printed and published an alphabetical list of the members who were, on the first day of June of that year, entitled to keep open shop as Pharmaceutical Chemists.

The primary object of the Register is to confer a distinction upon persons duly qualified for the business of a pharmaceutical chemist. The first condition, therefore, is the possession of the requisite qualification, either proved by passing the prescribed examination, or (in the case of the original members) implied by the recognition of their position in the business upon their own account, or in partnership with any other person, or as having served an apprenticeship of three years and acting as a druggist's assistant for one year prior to the 15th February, 1871. The other condition—without which the College could not continue to exist, and which is, therefore, sanctioned in the Act—consists in the payment of the fees and subscriptions as required by section 17 of the Pharmacy Act.

It is hoped every member will see the importance of having his name inserted in the Annual Register which is to be published in June. The absence of their names from the Register of the Society deprives them of the right to assume the name of Pharmaceutical Chemist, or to use any name, title, or sign implying that they are identified with the College. It is proper to remind those who exclude themselves from these privileges, that they will, in all probability, have cause to regret their lukewarmness by having to pay the penalty for infringement of the Act.

The College is increasing its influence, and is becoming known and recognized by the public. New members are coming forward, and, by passing the examination, are raising the standard of qualification, which reacts upon the character of the College, increasing the value of membership. Every member, therefore, who takes an interest in the profession will do his best to forward the cause the Council have at heart—viz., the founding of a College for the better education of the future chemists and druggists of the Province of Ontario.

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DRUGS, MEDICINES, &c.	$ c.	$ c.
Acid, Acetic, fort	0 15 @	0 16
Benzoic, pure	0 23	0 30
Citric	1 40	1 50
Muriatic	0 05	0 06
Nitric	0 11½	0 15
Oxalic	0 28	0 30
Sulphuric	0 03½	0 07
Tartaric, pulv	0 50	0 50
Ammon, carb. casks	0 23	0 24
" jars	0 23	0 24
Liquor, 880	0 25	0 28
Muriate	0 14	0 15
Nitrate	0 45	0 60
Æther, Acetic	0 45	0 50
Nitrous	0 35	0 37
Sulphuric	0 50	0 50
Antim. Crude, pulv	0 15	0 17
Tart "	0 55	0 65
Alcohol, 95 per ct.....Cash	1 95	2 05
Arrowroot, Jamaica	0 18	0 22
Bermuda	0 50	0 65
Alum	0 02½	0 03½
Balsam, Canada	0 50	0 50
Copaiba	0 95	1 00
Peru	3 75	4 00
Tolu	1 15	1 20
Bark, Bayberry, pulv	0 20	0 22
Canella	0 17	0 20
Peruvian, yel. pulv	0 42	0 50
" red "	2 10	2 20
Slippery Elm, g. b	0 15	0 20
" flour, packets	0 28	0 32
Sassafras	0 17	0 20
Berries, Cubebs, ground	0 20	0 25
Juniper	0 06	0 10
Beans, Tonquin	0 62	1 10
Vanilla	30 00	30 00
Bismuth, Alb	3 30	4 00
Carb.	3 50	4 00
Camphor, Crude	0 38	0 40
Refined	0 45	0 50
Cantharides	2 40	2 50
Powdered	2 60	2 70
Charcoal, Animal	0 04	0 06
Wood, powdered	0 10	0 15
Chiretta	0 23	0 30
Chloroform	1 10	1 65
Cochineal, S. G	0 75	0 90
Black	1 10	1 20
Colocynth, pulv	0 60	0 65
Collodion	0 70	0 80
Elaterium.....oz	3 20	4 00
Ergot	0 32	0 45
Extract Belladonna	1 50	1 60
Colocynth, Co	1 25	1 75
Gentian	0 50	0 60
Hemlock, Ang	0 00	0 95
Henbane, "	1 50	1 60
Jalap	5 00	5 50
Mandrake	1 75	2 00
Nux Vomic.....oz	0 40	0 50
Opium.....oz	1 50	
Rhubarb	5 00	5 50
Sarsap. Hon. Co	1 00	1 20
" Jam. Co	3 50	4 00
Taraxacum, Ang	0 70	0 80
Flowers, Arnica	0 17	0 25
Chamomile	0 32	0 40
Gum, Aloes, Barb. extra	0 70	0 80
" " good	0 40	0 50
" Cape	0 16	0 20
" " powdered	0 20	0 30
Socot	0 50	1 35
" " pulv	1 00	0 00
Arabic, White	0 70	0 75
" powdered	0 60	0 75
" sorts	0 24	0 30
" " powdered	0 42	0 50
" com. Gedda	0 13	0 16
Assafœtida	0 40	0 42
British or Dextrine	0 13	0 15
Benzoin	0 35	0 75
Catechu	0 12	0 15
" powdered	0 25	0 30
Euphorb, pulv	0 35	0 40
Gamboge	1 40	1 50
Guaiacum	0 95	1 00
Myrrh	0 50	0 85

DRUGS, MEDICINES, &c.—*Contd.*	$ c.	$ c.
Sang Dracon	0 60	0 70
Scammony, powdered	6 00	6 50
" Virg. "	14 50	—
Shellac, Orange	0 90	1 00
Gum, Shellac, liver	0 80	0 90
Storax	0 40	0 45
Tragacanth, flake	1 10	1 75
" common	0 53	0 65
Galls	0 22	0 30
Gelatine, Cox's 6d	1 15	1 20
Glycerine, common	0 25	0 30
Vienna	0 29	0 30
Prices	0 60	0 75
Honey, Canada, best	0 16	0 17
Lower Canada	0 14	0 16
Iron, Carb. Precip	0 20	0 25
" Sacchar	0 40	0 55
Citrate Ammon	1 75	1 80
" & Quinine, oz	0 60	0 62
" & Strychine	0 20	0 25
Sulphate, pure	0 08	0 10
Iodine, gocd	6 75	7 00
Resublimed	7 50	8 00
Jalapin	1 25	1 50
Kreosote	2 40	2 50
Leaves, Buchu	0 22	0 32
Foxglove	0 25	0 30
Henbane	0 35	0 40
Senna, Alex	0 27	0 60
" E. I.	0 14	0 20
" Tinnevilly	0 20	0 30
Uva Ursi	0 15	0 17
Lime, Carbolate.....brl	5 50	—
Chloride	0 05	0 06
Sulphate	0 08	0 12
Lead, Acetate	0 15	0 16½
Leptandrin.....oz.	0 60	—
Liq. Bismuth	0 50	0 75
Lye, Concentrated	1 75	2 00
Liquorice, Solazzi	0 50	0 55
Cassano	0 23	0 40
Other brands	0 14	0 25
Liquorice, Refined	0 35	0 45
Magnesia, Carb. 1 oz.	0 20	0 25
" 4 oz.	0 17	0 20
Calcined	0 65	0 75
Citrate.....gran.	0 63	0 75
Mercury	1 85	1 90
Bichlor	1 70	1 75
Chloride	1 90	2 00
C. Chalk	0 75	80
Nit. Oxyd	1 90	2 00
Morphia Acet	4 60	4 75
Mur.	4 60	4 75
Sulph	4 80	5 00
Musk, pure grain.....oz	25 00	—
Canton	0 90	1 20
Oil, Amonds, sweet	0 40	0 45
" bitter	14 00	15 00
Aniseed	4 00	4 25
Bergamot, super	6 50	6 50
Caraway	3 20	3 50
Cassia	2 50	0 00
Castor, E. I	0 16	0 18
Crystal	0 22	0 25
Italian	0 26	0 28
Citronella	1 15	1 25
Cloves, Ang	3 00	3 00
Cod Liver	1 05	1 50
Croton	1 75	2 00
Juniper Wood	0 80	1 00
Berries	6 00	7 00
Lavand, Ang.....oz.	0 90	1 00
Exotic	1 40	1 60
Lemon, super	4 60	5 75
ord	3 20	3 40
Orange	5 25	5 50
Origanum	0 65	0 75
Peppermint Ang	15 00	16 00
" Amer.	5 00	5 50
Rose, Virgin	8 50	8 75
" good	6 80	7 00
Sassafras	0 75	1 90
Wintergreen	6 00	6 50
Wormwood, pure	4 00	6 00
Ointment, blue	1 30	1 50
Opium, Turkey	8 25	8 04
pulv	10 00	10 55

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	$ c.	$ c
DRUGS, MEDICINES, &c.—*Cont'd*		
Orange Peel, opt.	0 30	0 36
" good	0 12½	0 20
Pill, Blue, Mass.	1 30	1 40
Potash, Bi.chrom	0 23	0 27
Bi-tart	0 33	0 35
Carbonate	0 14	0 20
Chlorate	0 12	0 65
Nitrate	10 50	11 00
Potassium, Bromide	1 00	1 10
Cyanide	0 65	0 70
Iodide	5 75	6 25
Sulphuret	0 25	0 35
Pepsin, Boudault's...oz	1 40	—
Houghton's... doz.	8 00	9 00
Morson's...oz.	0 85	1 10
Phosphorous	0 95	1 00
Podophyllin	0 50	0 60
Quinine, Pelletier's	—	2 45
Howard's	2 40	—
" 100 oz. case.	2 35	—
" 25 oz. tin..	2 35	—
Root, Colombo	0 13	0 20
Curcuma, grd	0 12½	0 17
Dandelion	0 17	0 20
Elecampane	0 16	0 17
Gentian	0 08	0 10
" pulv	0 15	0 20
Hellebore, pulv	0 17	0 20
Ipecac, "	1 50	1 60
Jalap, Vera Cruz	90	1 15
" Tampico	0 70	1 00
Liquorice, select	0 12	0 13
" powdered	0 15	0 20
Mandrake "	0 20	0 25
Orris, "	0 20	0 25
Rhubarb, Turkey	2 50	2 75
" E. I	1 10	1 20
" " pulv	1 20	1 30
" " 2nd	0 90	1 00
" French	0 75	—
Sarsap., Hond	0 40	0 45
" Jam	0 88	0 90
Squills	0 10	0 15½
Senega	1 10	1 20
Spigelia	0 25	0 30
Sal', Epsom	2 25	3 00
Rochelle	0 32	0 35
Soda	0 02½	0 03
Seed Anise	0 13	0 16
" Canary	0 05	0 06
Cardamon	2 25	2 50
Fe ugreek, g'd	0 09	0 10
Hemp	0 06½	—
Mustard, white	0 14	0 16
Saffron, American	1 00	1 10
Spanish	12 00	13 00
Santonine	7 50	8 00
Sago	0 08	0 09
Silver, Nitrate...Cash	14 85	16 50
Soap Castile, mottled	0 11	0 14
Soda Ash	0 03½	0 05
Bicarb. Newcastle	—	6 50
" Howard's	0 14	0 16
Caustic.	0 05½	0 05¾
Spirits Ammon., arom	0 35	0 35
Strychnine, Crystals	2 25	2 50
Sulphur. Precip	0 10	0 12½
Sublimed	0 03½	0 05
Roll	0 03	0 04½
Vinegar, Wine, pure	0 55	0 60
Verdigris	0 35	0 40
Wax, White, pure	0 75	0 80
Zinc. Chloride...oz	0 10	0 15
Sulphate, pure	0 10	0 15
" common	0 06	0 10
DYESTUFFS.		
Annatto	0 35 @	0 60
Aniline, Magenta, cryst	2 50	2 80
" liquid	2 00	—
Argols, ground	0 15	0 25
Blue Vitrol, pure	0 09½	0 10
Camwood	0 06	0 09
Copperas, Green	0 01½	0 02½
Cudbear	0 16	0 25
Fustic, Cuban	0 02½	0 04
Indigo, Bengal	2 40	2 50
Madras	0 90	0 95
Extract	0 30	0 35

DYESTUFFS—*Continued.*		
Japonica	0 07½	0 08
Lacdye, powdered	0 33	0 38
Logwood	0 02½	0 03
Logwood, Camp	0 02¼	0 3½
Extract	0 10	0 14
" 1 lb. bxs	0 13	—
" ½ lb. "	0 14	—
Madder, best Dutch	0 13	0 15
2nd quality	0 12	0 14
Quercitron	0 03	0 05
Sumac	0 06	0 08
Tin, Muriate	0 10½	0 12½
Redwood	0 05	0 06
SPICES.		
Allspice	0 11½@	0 12
Cassia	0 39	0 40
Cloves	0 46	0 48
Cayenne	0 28	0 30
Ginger, E. I	0 19	0 20
Jam	0 20	0 30
Mace	1 65	1 75
Mustard, com	0 20	0 25
Nutmegs	1 15	1 20
Pepper, Black	0 22½	0 23
White	0 48	0 50
PAINTS, DRY.		
Black, Lamp, com	0 07 @	0 08
" refined	0 25	0 30
Blue, Celestial	0 08	0 12
Prussian	0 65	0 75
Brown, Vandyke	0 10	0 12½
Chalk, White	0 01	0 01½
Green, Brunswick	0 07	0 10
Chrome	0 16	0 25
Paris	0 30	0 35
Magnesia	0 20	0 25
Litharge	0 07	0 09
Pink, Rose	0 12½	0 15
Red Lead	0 07½	0 08
Venetian	0 02½	0 03½
Sienna, B. & G	0 07	0 08
Umber	0 07	0 10
Vermillion, English	1 85	1 90
American	0 25	0 35
Whiting	0 85	0 90
White Lead, dry, gen	0 08½	0 09
" " No. 1	0 07	0 08
" " No. 2	0 05	0 07
Yellow Chrome	0 12½	0 35
" Ochre	0 02½	0 03½
Zinc White, Star	0 10	0 12
COLORS, IN OIL.		
Blue Paint	0 12 @	0 15
Fire Proof Paint	0 06	0 08
Green, Paris	0 30	0 37½
Red, Venetian	0 07	0 10
Patent Dryers, 1 lb tins	0 11	0 12
Putty	0 03½	0 04¼
Yellow Ochre	0 08	0 12
White Lead, gen. 25 lb. tins	2 50	—
" No. 1	2 25	—
" No. 2	2 00	—
" No. 3	1 75	—
" com	1 30	—
White Zinc, Snow	2 75	3 25
NAVAL STORES.		
Black Pitch	5 00 @	5 25
Rosin, Strained	4 50	—
Clear, pale	7 80	—
Spirits Turpentine	0 62	0 65
Tar Wood	5 50	5 75
OILS.		
Cod	0 63 @	0 70
Lard, extra	0 85	0 90
No. 1	0 75	0 80
No. 2	0 72	0 75
Linseed, Raw	0 75	0 80
Boiled	0 80	0 85
Olive, Common	1 10	1 20
Salad	1 80	2 30
" Pints, cases	4 20	4 40
" Quarts	3 25	3 50
Seal Oil, Pale	0 70	0 70
Straw	0 68	0 70
Sesame Salad	1 30	1 35
Sperm, genuine	2 30	2 40
Whale refined	0 90	0 95

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CANADIAN

PHARMACEUTICAL JOURNAL

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Original and Selected Papers.

A NEW ADULTERATION OF PORT WINE.

BY E. B. SHUTTLEWORTH.

Having recently had occasion to test a number of samples of port wine, I principally directed my attention to the detection of foreign coloring matter as affording the best evidence of falsification. On applying the test recommended by Lapeyrere,* five out of the fourteen samples examined gave colorations differing from the remaining nine. This test appears to be of some value, but I have no doubt that considerable experience is required before a definite and satisfactory conclusion can be arrived at. Filtering paper is saturated with a solution of acetate of copper, dried, and dipped in the suspected wine. If genuine, a greyish rose-red color is produced. Logwood is said to give a distinct sky-blue, while other coloring matters give modifications of the original natural tint.

On examining by the spectroscope, the nine samples before alluded to, the spectra produced showed no special characteristics,

* Jour. de Pharm. et de Chimie.

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and this would go to confirm the statements of Sorby† and Phipson‡ who found that the coloring matter of the grape gave no absorption bands, but only a general darkening of the spectrum. The five remaining samples of wine gave decidedly different spectra, and one of them so peculiar that I was led to suspect the presence of fuchsine.

A further examination by other tests rendered this fact unmistakeably evident, and I have since ascertained that a mixture of magenta and a blue coloring matter known to the trade as azaline, are largely employed for the purpose of coloring cheap made-up wines. These colors are put up and sold by the dealers in wine and spirit doctoring materials, and are sold at exorbitant prices.

In order to detect the adulteration, I have found the following method to be satisfactory, and very easy of application. To a portion of the suspected wine, placed in a test tube, add an equal volume of fusel oil; agitate well and allow the mixture to separate, when, if magenta be present, the supernatant layer will be more or less tinctured of a characteristic or pink or purple color. Genuine port, when so treated, does not impart to fusel oil any of its color, so that the slightest coloration may be taken as certain evidence of adulteration. If amylic alcohol be not at hand, ether may be substituted, but does not answer nearly so well.

Considering the dark color which factitious port must be made to assume, and the large quantity of such wine that is liable to be taken at one sitting, it is evident that the presence of these poisonous coloring matters might produce serious, if not fatal results.

† Jour. of Microscopical Science, Vol. ix, p 338.

‡ Jour. of Chem. Soc., Feb. 1870.

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SUGGESTIONS TO BEGINNERS IN PHARMACY.*

BY PROFESSOR WILLIAM PROCTOR, JR.

REPLY TO QUERY No. 30.—What shall I read, and where shall I begin? An essay in reply to this constantly recurring query of beginners, who are confused by the mass of books presented to them as sources of the knowledge they need.

If the reply to this query does any good it must be by appealing directly to those for whom it is intended, viz., beginners in pharmacy, or those in the first year of their apprenticeship, and indirectly to proprietors and qualified assistants, who have it in their power greatly to aid the former class by an occasional word of advice or friendly suggestion. When a boy enters an apothecary shop with the view to becoming a pharmaceutist, he is first employed in a great variety of services, as in opening and closing the shop, sweeping and dusting, cleansing mortars and other utensils, washing bottles, grinding, bruising, and garbling drugs, cutting herbs, stirring evaporating liquids, cutting, pasting, and attaching labels, bottling liquids, &c.; engagements requiring but moderate skill: after a time, however, the boy becomes aware that he is only on the surface of the knowledge he came to acquire, and that it is necessary for him to read and study. If he is thoughtful and earnest, and is fortunate in finding himself associated with a kindly disposed clerk, who will give a proper direction to his inquiries, and encourage his desire for knowledge, he soon gets sufficiently within the subject to find the great extent of its range and the variety of its detail.

The first effects of this impression are sometimes strongly discouraging and depressing, but if he perseveres, and has mastered the idea that all knowledge is of gradual growth, that like the stalactite it grows by accretion from without, as well as, plant-like, by development from within by thought-action, he will soon become reconciled to the process, and employ his spare time in its pursuit. But what shall the boys do who have no guide in a well-disposed associate, or who may be so unfortunate as to be the victim of a churlish or tyrannical clerk, or of an oppressive illiberal employer, or, what is nearly as bad, to be placed at service with an ignorant, ill-qualified preceptor?

In considering the query, it has appeared feasible to undertake a short and suggestive essay, which, without entering deeply or systematically into the subject of pharmaceutical tuition, may succeed in aiding this extensive class of learners, and at the same time afford help to well-disposed apothecaries, who really desire to aid their boys, but who are at a loss how to advise them.

* From the Proceedings of the American Pharmaceutical Association.

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The *special* knowledge requisite to the apothecary is of four kinds, viz.:

1st. A practical acquaintance with the implements and apparatus of pharmacy, and with the methods of using them in all kinds of manipulation.

2d. The intelligent use of this apparatus in making preparations of the Pharmacopœia, so as to adapt it to the nature of the material treated, which involves not only some acquaintance with the physical laws, but also with the nature and composition of drugs.

3d. The study of the scientific relations of pharmacy as explained in works on Chemistry, Materia Medica, Botany, and Physics, and a thorough acquaintance with the physical appearance and properties of drugs.

4th. That important part of the business involved in getting medicines ready for the sick, as well on the prescription of physicians, as on ordinary demand by consumers, where of maturity of judgment has to be exercised in regard to the correctness of substances required. The construction of the Latin language, and some knowledge of its vocabulary, is absolutely necessary in this department in many countries, though less indispensable here than abroad.

In view of all this knowledge to be gained, it must be apparent that the native ability, and the preliminary education of the boy, have much to do with his success in mastering its details. So important is it that the beginner in pharmacy should be well grounded in the ordinary branches of school education, that in several countries abroad, none but such are admitted to apprenticeship, with some knowledge of the classics superadded. When, therefore, he brings with him some rudimentary knowledge of the sciences as taught in the best common schools, our novice is well equipped, to make progress in the avocation he has chosen, and needs only perseverance to succeed.

The text-books upon which the beginner has mainly to depend, are the United States Pharmacopœia, the United States Dispensatory, and some one or more works on chemistry and pharmacy, with a Latin dictionary, and when possible Webster's dictionary. One of the first lessons is to get a practical acquaintance with the labels in the store, in connection with the substances labelled; this is the groundwork of his study of the business, and is essential to progress in other directions. The habit of abbreviating labels on shop furniture and in prescriptions, adds much to the trouble of the novice in learning them, and it has sometimes happened that he has never thoroughly acquired the terminations of the words so as to use them with facility. A good plan is to commence with a shelf of bottles or a row of drawers at a time, and by the aid of the officinal list of the Pharmacopœia and the Index of the Dispensatory, to copy the

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names in full into a rough note-book in *columns*, placing the English name in line. He should be assured that the labels are correct for the substances contained, and then by close observation get as clear an impression of the appearance, taste, and odor of each substance as possible. Another shelf or row should then be taken and proceeded with, observing from time to time to exercise the memory and the senses on each preceding lesson till it becomes familiar. This brings us to consider for a moment the manner of consulting the Pharmacopœia and Dispensatory for this purpose. The Pharmacopœia officinal list is arranged alphabetically, and the same arrangement applies to the groups or kinds of preparations, as well as to the individuals of each group. The *officinal names* (or authorized names) in full, with the regular English name, and a brief definition of the nature and natural source of the substance is given. Most Materia Medica names will be found in this list, whilst preparations will be found in the second part of the book, and most easily by consulting the index. Special attention should be given to the spelling of the Latin names and their terminations. For example, suppose our young friend in his first lesson has a drawer labelled "Colocyn.;" referring to the list he finds "*Colocynthis*," translated "Colocynth," and described as the fruit of Citrullus colocynthis "deprived of its rind." He naturally desires to know what sort of fruit, what are its qualities, what sort of a plant yields it, where it grows, what it is used for, &c. To get these answers he must go to the Dispensatory, article "Colocynthis," where he will find all he desires to know about it; but *this* inquiry may well be left until he has considerably extended his superficial knowledge of drugs and their correct names.

The immense size of the United States Dispensatory, and its comprehensiveness of detail, render it a formidable object as a text-book for the beginner, until he gets the key to its construction, and finds it almost as easily consulted as a dictionary, having an alphabetical arrangement. The greatest difficulty it presents is its fulness, and the longer time necessary to consult it. But it is by no means necessary for the beginner to read each entire article: for instance, in the example above stated, he can easily find that colocynth is a fruit like the mock-orange, growing on a vine with leaves like those of the watermelon, that its pulp is exceedingly bitter and purgative, that it comes from Northern Africa, and enters into several valuable medicines.

(To be continued.)

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VEGETABLE POISONS AND THEIR ANTIDOTES.*

BY E. M. HOLMES,

Curator of the Museum of the Pharmaceutical Society.

A knowledge of the action of poisons in the human frame, and of the means by which their fatal effects upon the system may be prevented, may perhaps appear to belong rather to the medical practitioner than to the pharmacist. There are, however, occasionally times when he is not at hand, and the prompt application of remedies being the only chance of saving life, as in poisoning by prussic acid or nicotine, the nearest chemist is called upon in the emergency. A knowledge, therefore, of the most reliable antidotes to use in cases of emergency cannot fail to be valuable to the pharmacist, and rightly forms a branch of his education.

For many poisons, more particularly those belonging to the vegetable kingdom, there are no real antidotes known, and it is therefore a subject which demands the attention of the pharmacist as well as the physiologist. The derivation or substitution compounds of the vegetable poisons have not been investigated to any extent, and the discovery of the different properties of methylstrychnia† to those of strychnia, show that there is here a wide field open to chemical discovery. This branch of science may, indeed, be said to have been culpably neglected, seeing that it has not kept pace either with chemical discovery or with the progress of medical science.

No amount of care on the part of the chemist can prevent the occasional occurrence of poisoning, nor can any Act of Parliament hinder the employment of substances in common use for the purposes of suicide or murder. Even if the sale of mineral poisons were entirely forbidden, there are many poisonous plants to be found in our gardens, fields, and hedges.

As an instance of the extent to which poisoning was carried in the 16th and 17th centuries, and therefore could again be carried, unless our knowledge of antidotes is improved, it is said that the manufacturer of the celebrated "acqua tofana" confessed to having been instrumental in the death of no less than 600 persons, and this in spite of the severest measures taken by the Government. It is obvious, therefore, that the best way to render poisoning less frequent as a crime, is to know how to counteract its effects.

The employment of antidotes appears to be of as ancient a date as the use of poisons. Thus we find that from very early times

* From the PHARMACEUTICAL JOURNAL AND TRANSACTIONS.

† PHARM. JOURN. (2), vol. i., p. 561.

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endeavours were made to discover an universal antidote. We read of Mithridates, King of Pontus, taking every morning a dose of an electuary, which was supposed to be an antidote for every kind of poison. It is possible that the opium which it contained may have proved an antidote to such poisons as dilate the pupil of the eye, and it may be owing to this that it retained a place in medicine for so long a period.

The researches of the ancients, however, like those of the alchemists for the elixir of life and the philosopher's stone, must have sadly disappointed their expectations. To find an antidote for even one poison is a matter of considerable difficulty, for the same drug will, under different circumstances and in different people, produce quite opposite effects. Thus, in some persons opium will produce sleep, in others wakefulness, and in some cases it has caused diarrhœa, delirium, or even lock-jaw.* Hemlock also in some instances has produced insensibility and convulsions, while in most cases consciousness is retained and the power of the muscles is paralysed. These results may be owing to difference of temperament, or condition of health at the time. Thus, in tetanus large quantities of opium may be taken without producing any effect. From these facts it would appear that *the symptoms produced are the best guide in the administration of antidotes.*

Many antidotes have, at different times, been brought into notice, some of which remove the poison from the stomach, others render it inert by chemical means, and others again produce a reaction by neutralizing the physiological effects of the poison. It is to the latter class that I would more particularly direct attention, for, although it is necessary to render inert, or to remove the bulk of the poison from the intestines, to prevent its absorption, yet it is only the small portion that is absorbed into the blood which causes death, and the effects of which it is necessary to combat by antidotes. In order to find what will best answer this purpose, it is necessary to investigate the way in which poisons are absorbed into the system; their action when absorbed; the way in which they cause death, and the manner in which they are eliminated by nature in cases which do not prove fatal.

But before investigating these points, it is necessary to define what vegetable poisons are. This is, perhaps, not so easy a matter as might at first appear. Plants which are poisonous to some animals are not so to others. Strychnia has no effect upon invertebrate animals, and is said not to poison monkeys. Many of the poisons which destroy the life of man and other carnivora are eaten with impunity by graminiverous animals. Thus, opium does not poison pigeons; tobacco and hemlock do not injure goats; and

* Taylor on "Poisons," p. 805.

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stramonium, henbane, and belladonna are eaten by rabbits.† Whether this is owing to the difference of digestive apparatus or to the knowledge of an antidote, as is said to be the case with the mungoose, must be at present a matter of speculation. Again, several umbelliferous plants, namely, *Cicuta virosa*, *Œnanthe crocata* and *Conium maculatum* are said to be without poisonous effect in Scotland, while in England, Wales, and Ireland they cause death as rapidly and almost as surely as arsenic. It is well known that the roots of hemlock are eaten as food by the Russian peasants. It is possible that coldness of climate may cause this difference, as it is a well ascertained fact that hemp will only yield its intoxicating resin in hot climates. A vegetable poison will therefore be best defined by saying that it is a vegetable production which, in the majority of cases, is capable of destroying human life when administered in small quantities. As poisons of the class are exceedingly numerous, it will only be possible to notice a few of them. Those which are in frequent use in medicine or commerce, and those by which death is most frequently caused, either accidentally or intentionally, more particularly demand our attention; many of the vegetable poisons being only known to, and obtainable by, the few.

On perusing the statistics of poisoning,‡ it will be found that in cases of *accidental* poisoning, the root of aconite, the tempting berries of belladonna, the peculiar capsules of stramonium, and the tuberous and somewhat agreeable roots of the poisonous umbelliferæ are those which have generally proved fatally attractive to human beings; and the leaves of the yew tree to animals, more especially in the winter season.

In cases of *intentional* poisoning, opium, strychnia, prussic acid, and tobacco have been the drugs generally resorted to; while the ignorant medicinal use of savin, digitalis, lobelia, and black hellebore has often led to unexpected and fatal results. Of the above-mentioned poisons more deaths have been occasioned by opium and its preparations than any other. Strychnia, prussic acid, aconite, and belladonna come next in order, cases of poisoning by the others being comparatively rare. To find antidotes for these poisons in particular is therefore of the greatest importance.

(To be continued.)

† PHARM. JOURN. (2), vol. xi., p. 871.

‡ Taylor on "Poisons," p. 237.

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THE PRODUCTS OF DRY DISTILLATION AT THE VIENNA EXHIBITION.*

BY PROF. HENRY SCHWARTZ.

The products of dry distillation may be divided into several groups according to the substance which is subjected to distillation.

TURPENTINE.

First, we have the production of turpentine and rosin. Quite an extensive strip of country between Wiener-neustadt and Gloggnitz, is devoted to the cultivation of the black fir, and the production of rosin and other products. Andes and Frobe, in Simmering, exhibited a handsome collection of tools and apparatus employed, and products obtained. Several extensive manufactories, such as Furtenbach's and Biach's, distill the crude turpentine by steam heat to obtain oil of turpentine and colophone, beside subjecting the rosin to dry distillation, which breaks it up into pinoline, a heavy rosin oil and pitch. This rosin oil is mixed with caustic lime and employed as wagon grease, being sometimes colored black with soot or lamp black. Portugal has for years devoted a large tract in the State forest, where the pine flourishes, to this industry. The product obtained contains a large quantity of oil of turpentine. In 1871-2, as much as 275,000,000 kilos. of turpentine were collected, which yielded 45,000,000 kilos. of oil of turpentine, 189,000,000 kilos. colophonium, and 36,000,000 kilos. yellow rosin, while the remainder was sold as crude turpentine, going to London and Lisbon. Spain sent rosin also from Guadarama.

PETROLEUM.

The second group embraces petroleum, photogene and paraffin, the hydrocarbons so much used for illumination. Strictly speaking petroleum is by no means to be considered as a product of dry distillation. It agrees so completely with photogene in its properties and uses that we may leave this theoretical question out of view. Among all the countries where petroleum is found, North America, without doubt, ranks first, the value of her annual production of petroleum being only second to that of cotton and wheat. Galicia in Austria, the trans-Caucasian provinces of Russia, and those on the Caspian, with Farther India (Rangoon), and finally Roumania, are of nearly equal importance. Roumania had numerous exhibitors of oil and paraffin, and is beginning to play an important part in these articles. The cost of production there is so low that, in spite of import and export duties, and transportation for 150 miles by land and railroad, it can be brought to Galicia so as to compete

* Journal of Applied Chemistry.

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with that produced there. Rangoon was not represented by petroleum in the English section of the exhibition. Austria is blessed with rich petroleum treasures in Galicia. At the foot of the Carpathian mountains, near the north end, petroleum is found from Bochnia to the borders of Bukowina for a distance of 300 miles, and has already been discovered in not less than 150 places. It has been known there for a very long time, as shown by the derivation of the names of many places in that province. In America, the oil which collected on the surface of standing water, along the edges of streams, and in shallow ditches, was gathered by the Indians and used for medicinal purposes, and similar cases are reported in Galicia. There was, however, this difference, that while in America the legislation in reference to boring for petroleum left nothing in doubt, in Galicia it is variable; in America there were enterprise, capital and easy communication, while Galicia is far behind in these things. In 1848, some Jews first undertook to obtain petroleum in Galicia, and since 1853 a wild, careless method of working has been developed, employing shallow pits which reached only to the upper layer of the petroleum-bearing marl, and when that immediate vicinity was exhausted they were deserted and fresh ones dug. More rarely the marl brought out was mixed with water, when the oil contained in it would rise to the surface. Gradually more energy was infused into this industry, so that the yield in 1866 was about 166,000 cwt. Unfortunately the yield has since decreased, until, in 1871, it was only 70,000 cwt. Lukasiewicz did much for this branch of industry by sinking 35 wells, some of them 700 feet deep, and introducing the American system of boring. In this way more satisfactory results were obtained, as was expected, so that some of the wells produced 100 cwt. of petroleum per day. This much seems to be established, that enough crude material could be obtained by improved methods of working, and that it could be refined as easily and perfectly as American petroleum. In fact, this oil possesses one advantage over the American, for it contains less of the highly volatile oils, and consequently more illuminating oil. Some of the oils are free from parafin, and hence do not freeze in the greatest cold. There were fourteen exhibitors, some of whom exhibited refined oil, others the crude. C. Pratt, of New York, exhibited a specimen of petroleum which he calls astral oil, with a very high burning point.

It seems as if petroleum, having been produced in such immense quantities in America, had almost extinguished the previously flourishing industry of making photogene and paraffin. All manufactories that used poor material, like shale and peat, have, of course, stopped. On the other hand, the distillation of bog-head coal in England, and of brown coal in Saxon-Thuringia, continues to be profitable. The former is carried on very extensively by Young in England, and 50 per cent. of tar is obtained, which is very rich in

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oils of a high boiling point, but low specific gravity, and which burn with a brilliant light and are perfectly free from danger. The coal obtained by the Murajewnisch Co., in Rjæsan, is very similar to the English material, and the product obtained from it is all that could be desired.

TAR FROM BROWN COAL.

The distillation of brown coal is carried on chiefly for its tar, which is very rich in parafin, and hence the exhibitors have done well in placing this beautiful product in the foreground. Not all brown coal is suited to the profitable production of tar. In all Germany there is but a comparatively small tract of country, lying between the cities of Halle, Weissenfels and Zeitz, in Saxon-Thuringia, where such a coal is found. This coal is pulverulent, and when dry has a light yellow color; it is found chiefly in the outcrop of strata, in detached masses, and in thin layers; the tar produced equals 16 per cent. of the weight of the fresh coal, possesses a light color, and has a low specific gravity, and besides, owing to the large per centage of parafin in it, it has a buttery consistency even in summer. It seems that this kind of coal is also found in Bohemia, but only in small quantities. Upon analysis it is found to contain as much as 11 per cent. of hrydrogen. It fuses in a candle flame like sealing-wax, and a light-yellow resin, melting at 160° Fahr., may be extracted from it by boiling alcohol. The tar is obtained by distilling the coal at a dull red heat in horizontal or upright iron retorts. The latter, when formed of a series of inverted iron bells, possess this advantage, that the heat has to penetrate only a thin layer of coal, and the tar produced is immediately run off. In purifying the tar, pains are taken to avoid any unnecessary distillation, since it has been ascertained that the yield of paraffin is thereby diminished. Dr. B. Hubner, in Zeitz, has discovered that, by treating the tar directly with sulphuric acid and afterward distilling it over lime, it is unnessary to distill the paraffin, and the yield is two per cent. higher. The quantity of soft paraffin, which was formerly destroyed by hot sulphuric acid in the final purification, is now reduced to a minimum, and is mixed with stearin for candles. The great progress which this industry has made is shown not only in the excellently-arranged exhibition made by several firms in Zeitz, Halle, Weissenfels and other places, but also by the statistics, which show the very considerable extension of this branch of manufacture. In 1871, in this district, 41 tar works, employing 1844 horizontal and 610 upright retorts, consumed over 300,000 tons of coal, and produced 33,823 tons of tar; 1,350 laborers were employed, and the capital invested exceeded $1,700,000 in gold. The same number of laborers and a still larger amount of capital were employed in refining the tar and converting it into photogene, solar oil, paraffin oil, paraffin and asphalt. The soda employed in the purification is regenerated

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by evaporating and igniting, and also mixed with the sulphuric acid employed to make Glauber's salt, carbolic acid being also obtained. The sulphuric acid, after the tar has been removed, can be used in making superphosphates, ammonia salts and green vitriol, while the tar is burned to make lamp black.

In contrast with this immense industry stands the similar production of tar from Lias shale. It may here be remarked that certain kinds of paraffin—for instance, that made by Dr. Hubner—melts at 63° C. (145° F.), whereas the normal melting point is 53° to 55°C. (127° to 131° F.) The heaviest oils are now treated like the analogous petroleum residues, namely, allowed to flow into strongly heated iron retorts, and thereby converted into a heavy illuminating gas, which burns very slowly and makes a good light. P. Suckhow, of Breslau, exhibited a complete apparatus for this purpose, which is easily attached and so constructed that it can be very easily masoned in.

HEAVY COAL TAR.

Very different from the light tar of brown coal is the heavier tar from bituminous coal. The latter is produced at a much higher temperature, and is a by-product in the manufacture of illuminating gas. Although on the average only five per cent. of the coal is converted into tar, yet, owing to the great extension of coal gas illumination, the total quantity produced is immense. We may suppose that in London alone a million and a half tons of coal are used in making gas, and in all England ten million tons, which would yield half a million tons of tar. The production of the rest of the world may be reckoned at an equal quantity. Coal tar can now be used profitably. It can be employed for covering roofs, making asphalt and asphalt tubing, for painting wood and other purposes. Its uses are far more varied and numerous if it be subjected to distillation. The principal products thus obtained are benzole, carbolic acid, naphthalin and anthracene. Each of these substances opens a series of highly interesting and important uses. At present Germany stands at the head of this branch of industy, and has almost complete control of the market in coal tar colors. Hence we are not surprised that many German manufacturers sent coal tar products to the exhibition. Among these were four—Rutgers near Breslau, Erkner in Berlin, Angern on the Nordbahn, and Niederau near Meissen—who together distill 6,250 tons of tar. Rutgers is largely engaged in preserving railroad ties. He uses partly chloride of zinc and partly the heavy oil of coal tar, containing carbolic acid, and which was first employed by Bethell, in England, for this purpose. He is compelled to import a good deal of this oil from England.

In general, no essential improvement has been made in the material used as foundation for the coal tar colors. Anthracene, which

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is found in the last heavy oil, has gained a special importance, and in obtaining it the tar is often distilled until only coke is left, in order to obtain as much as possible of this substance, which is so important for the manufacture of artificial alizarin.

There remains to be described the distillation of wood and similar substances for the manufacture of wood tar and wood vinegar. In this department Austria is well represented. The old tradition of the distillation of wood in Blansko, where Reichenbach carried on his celebrated investigations, which have become in many ways the foundation of our knowledge of dry distillation, still has its effect. Dr. Oppler, near Nuremberg, manufactures wood vinegar and iron mordants, as well as ammonia salts and tin preparations; both his establishment and that of the Chemical Union, at Mainz, deserve a more detailed description. It is well known that in the Grand Duchy of Hesse there are many oak forests, and the excellent oak bark from here has rendered celebrated the leather of the Rhine, and especially Mainz leather. After peeling off the bark, the wood is left in short sticks about an inch thick, which are subjected to distillation. By carefully regulating the temperature, a large yield of very good charcoal is obtained, and the valuable wood vinegar, which is purified as usual, and also wood spirit tar. This company possesses in all seven factories, which in 1871 produced $285,000 worth of these articles. Besides various acetates, including some beautiful verdigris, and pressed coal from the refuse of the charcoal, and there were also interesting specimens of butyric, valerianic and capronic acids, prepared from the mother liquors of the acetate of soda. The presence of these acids there has only recently been demonstrated.

THE BRITISH PHARMACOPŒIA ADDENDUM.*

BY C. UMNEY.

Discussions upon the nomenclature, the weights and measures, the preparations, and other matters connected with the British Pharmacopœia, have on many occasions during the past three or four years, occupied the members of this Society at their evening meetings.

Although the repeated invitations of the President, to have subjects of pharmaceutical interest brought forward for discussion, have not been as heartily responded to as he and other well-wishers to pharmacy could be desired, still, it is beyond dispute that when opportunities have occurred for the interchange of ideas upon such

* Read at the Evening Meeting of the Pharmaceutical Society, April 1, 1874, and published in the Pharmaceutical Journal and Transactions.

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topics as have been presented at our evening meetings, good has invariably resulted.

During the past year pharmaceutical research has, it is to be regretted, flagged considerably; it can hardly have been caused by the announcement that the Supplement or Appendix to the British Pharmacopœia was to be published at an early date, for one would have imagined an announcement from Professor Redwood that such a publication might be expected, would have stimulated pharmacists to have brought forward all matters that deserved the attention of the Pharmacopœia Committee.

To those who have worked to amend the errors of the 1867 edition, as well as to those who have bestowed thought and labor upon the preparations now added to our national pharmacopœia, our thanks are due.

As you well know, after some considerable delay, the addendum has made its appearance, and it has the good fortune to be associated with a volume of which pharmacists are justly proud, and with which the medical profession is evidently satisfied, as was shown by the *Lancet* in a recent article upon the British Pharmacopœia, the closing paragraph of which might be here reproduced with advantage:—

"It will be seen that there is at least a promise of some valuable matter in these additions to our national Pharmacopœia, and if the practical knowledge and judgment displayed in preparing the previously published part of the work have been equally exercised in this, the profession will be indebted to the Medical Council and the Pharmacopœia Committee for their labors in this direction."—(*Lancet*, March 21, 1874.)

My object in addressing you this evening is not so much to bring my preparations (placed upon the table) specially under your notice, but rather to have them before us as illustrative of the 34 new remedies and substances used in the preparations of medicine contained in the supplement, while we discuss their relative merits.

I must acknowledge that I have had no special experience of many of the matters before us other than that I have gained, by way of experimenting, during the past few days; I ask, therefore, your indulgence for any errors of judgment that I may commit, in my haste to bring so important a matter before you.

Let us in this discussion be mindful of the fact that the compilation of a work is a much more difficult task than a criticism; also, on the other hand, that criticism fairly carried on must, in the end, be to the benefit of those criticised.

Lut us turn, then, to the Supplement, and take the preparations *seriatim*.

Acetic Ether.—This body, although not new to the chemist, is a body with which pharmacists are but little familiar. All will remember the characteristic and pleasant odour so often noticed in

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preparations containing alcohol and acetic acid, and notably in the officinal tincture of acetate of iron, in which acetic ether is unmistakably formed, much to the detriment of the tincture, not so much from its presence as from the loss of acetic acid, and consequent deposit of a basic salt (which, by the way, may be obviated to a degree by having about 5 per cent. free acetic acid present in the tincture). This ether, we have been told, has more especially been introduced with a view to its use subsequently when the pharmacopœia is more generally altered.

The special objects in its introduction may have been for flavoring certain preparations, and also to have a more perfect solvent of cantharidin when making blistering fluid.

The Pharmacopœia does not pretend in all cases to give minute directions to manufacturers, but general remarks for their guidance, it therefore merely states that this ether may be made from dry acetate of soda, rectified spirit, and sulphuric acid. A better form could hardly have been given, as the more anhydrous the two liquids the more quickly and abundantly do they produce the compound ether.

Chloride of calcium is directed to be used to dry the ether when produced by digestion, with half its weight, and final rectification.

Here I cannot help noticing one omission of great importance, which may lead to confusion, viz., the non-rectification of the product from a solution of carbonated alkali, to remove free acetic acid, of which considerable quantity will always be present.

Under "characters and tests" we have the specific gravity described as 0·910, and the boiling point 166°. In Gmelin's Chemistry we find the specific gravity described as ·888, and the boiling point as 165° (74° C.)

Miller also very nearly corroborates this, for he names ·890 as the specific gravity, and 164° as the boiling pointr

But upon reference to Watt's Dictionary of Chemistry, this ether is described as having a specific gravity at 0° C. of ·910 (Kopp) and a boiling point 74·3 (166 Fahr.).

In the face of this conflicting evidence by good authorities, it is difficult to decide at any rate the specific gravity of acetic ether, unless by actually working out the matter for oneself.

I had my suspicions, that if I could find a specimen in pharmacy that would answer to the pharmacopœia tests, I should, in all probability, find free acetic acid as an impurity, I also thought that some specimens might be contaminated with ordinary sulphuric ether.

Accordingly I examined three, with results as under :—

	Specific Gravity.	Boiling point.	Free Acid.
a	·890.....	160°	none.
b	·889.....	158°	"
c	·915.....	164°	10 per cent. of monohydrated acetic acid.

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Washed with an equal volume of water, while *a* lost 3·5 per cent. *c* lost 10 per cent.

I find that the acetic ether of the French Codex is directed to be rectified from a small quantity of potassic carbonate, but not from chloride of calcium.

The resulting ethereal liquid would not, although deprived of acid, be thoroughly dessicated, and would contain (probably 10 per cent.), of *either* water, alcohol, or sulphuric ether; even all might be present.

It would therefore appear that the text in the addendum, to be strictly accurate, must in some way be modified, and at least direct the rectification of the product over carbonated alkali, to ensure the absence of free acetic acid.

I should imagine that the French Codex preparation would be preferable; but this remark at the present time is premature, for I am not fully aware whether almost anhydrous acetic ether would not be required in some preparations.

I purpose further investigating certain points connected with this liquid as soon as possible.

Nitrate of Ammonia is so well known to us, as the source of laughing gas, that it seems almost unnecessary to bring it before you.

The tests of the Pharmacopœia have been framed with great caution, anyone carefully following these cannot fail to select a good specimen of the salt now so largely used for the production of nitrous oxide for use by the surgeon dentist.

It would be well here to call attention to the presence of chlorides in some commercial specimens which must, upon being fused, produce a gas much contaminated with the irritating vapour of ammonium chloride.

Nitrate of Amyl.—This powerful medicine, although known since 1844, when it was discovered by Balard, has been but little used. We are indebted to Guthrie* for having first observed in 1858 the remarkable and powerful action of this liquid on man. Its physiological properties have been investigated by Drs. Richardson, Brunton, Talfourd-Jones, Anstie, and others, and have formed the subject of more than one paper for the meeting of the British Association. To those reports and to other journals† I must refer anyone desirous of becoming further acquainted with the medicinal properties of this liquid.

Pharmacists, here and in America, seem to have given some attention to the production of this remedy in a state of purity.

Maisch‡ prepares it by the action of nitric acid direct upon

* *Journal of Chemical Society*, vol. xi. 1859.

† *Pharmaceutical Journal*, Sept. 1870, p. 209, and *Pharmaceutical Journal*, Nov., 1871.

‡ *Pharmaceutical Journal*, April, 1871, p. 465.

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amylic alcohol, and reserves that portion of the liquid for final purification which distils between 96° and 100° C.

Tanner* takes advantage of Redwood's process for spirit of nitrous ether (the British pharmacopœia process), and prepares the amyl nitrite in this way. Other processes have also been suggested, which I should recommend to your notice.

The chief points in the production of this body in a state of either absolute or even medicinal purity, first and foremost hinge upon the thorough fractional distillation of the fousel oil, until the amylic alcohol selected for use has a constant boiling point of 132° C. The crude nitrite, prepared by either of the processes indicated, must be washed with caustic soda, to remove prussic acid formed during the process, and nitrous compounds, and finally rectified over potassic carbonate.

That portion only is reserved for use in medicine which distils between 96° and 100° C.

The boiling point, as given in the Pharmacopœia, is not, I presume, intended to be the boiling point of absolutely dry and pure amyl nitrite, indicated by Guthrie, as 99° (210° Fahr.), but rather an average boiling point of good medicinal nitrite, ranging through some eight or ten degres of Fahrenheit's scale.

The specific gravity, as represented in the Pharmacopœia, is, I believe, for medicinal purposes, sufficiently accurate. Some three years since,† I found that some specimens I then examined were not amylic nitrite, but were contaminated with nitrites of radicals much higher in the series than amylic alcohol.

Chloroform Water is, perhaps, one of the best of the introductions into the Pharmacopœia. All, at some time or other, have been inconvenienced by the sparing solubility of chloric ether, when ordered in a mixture in such quantity as to be only partially dissolved, which difficulty has been considerably aggravated by the variable strength of chloric ethers as compared with the officinal spirit of chloroform.

The water, containing one-half per cent. (fluid) of chloroform, seems to be, as far as I have observed, a fully saturated solution.

Areca nuts, as they are termed in commerce, are introduced as a vermifuge.

It has been urged that this remedy to exert its maximum anthelmintic force, must be in a certain state of division, and not prepared as a fine powder.

My opinion is that this is more imaginary than real, and that, in all probability, when a specimen has been pronounced inert, it was due either to partial destruction by an insect of the betel seed

Pharmaceutical Journal, Nov. 25, 1871, p. 421.

† *Pharmaceutical Journal*, Nov. 26, 1870, p. 422.

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before powdering, or to the powder having been stored for a considerable period previous to administration.

Aurantii Fructus is introduced for the fresh peel, directed to be used in the preparation of Tinct. Aurantii Recentis. Fruit merchants consider the fruit in perfection in the months of February, March, and April; pharmacists should therefore prepare their stock of tincture for the ensuing year as soon as possible.

Bismuthi oxidum is introduced with a view to its use in subsequent Pharmacopœias. Solution of citrate of bismuth and ammonia is the preparation for which it is, no doubt, intended by a manipulation very similar to that given by Wood (*Pharmaceutical Journal*, 16th September, 1871). A liquor thus prepared is free from the impurities common in the present officinal solution, which process is seldom if ever resorted to by manufacturers. This oxide can be obtained by boiling basic nitrate with caustic soda solution, 80 parts being produced from 100 of the nitrate.

Calcis Hypophosphis and *Sodæ Hyphophosphis* are already in considerable use in medicine; they may be said to have forced their way into the Pharmacopœia from the fact that their medicinal value is acknowledged on all sides.

We shall, doubtless, in forthcoming editions, hear more of these, in the form of syrup or other convenient modes of administration, and if not of these, probably of a ferruginous syrup with hyphosphorous acid (syrupus ferri hypophosphitis). This latter is now in demand, and may most rapidly and advantagously be prepared by Wood's process (*Pharmaceutical Journal*, vol. ix. p. 461).

While we are speaking of acids of phosphorous, I should like to draw attention to the advantages in using a phosphoric acid of greater strength than the 10 per cent. solution now officinal, for the manufacture of a certain class of preparations now in considerable demand, with a view of introducing it into the Pharmacopœia on a future occasion. I would employ a 50 per cent. solution at least (specific gravity, about 1·500) as described by Carteighe (Pharmaceutical Journal, 26th March, 1871).

I am tempted to again dwell upon a preparation containing the element phosphorus, which seems to be playing, you know, an important part in the medical treatment of the present "high pressure" days.

The preparation to which I would refer, perhaps, will be thought by some to savour of quackery, but still it is in enormous demand. The public, who are generally keen observers of the value of such remedies, attach great importance to it, but whether their views are wholly corroborated by the medical profession, I am not prepared to say. It will be sufficient to remark that it is one of those compounds which are dubbed by our American cousins (the *Lancet* styles some of the addendum preparations in the same way) as "elegant pharmacy." The compound syrup of the phosphates,

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known popularly as Parrish's Syrup, is the preparation to which I refer, and my own view is, the sooner we have an official formula for it the better. Why not this, as well as citro-tartrate of soda, which was introduced to imitate a well-known preparation, and to keep pace with the public taste for physic?

Charta Sinapis.—Mustard leaves, as they are termed in trade, were made officinal in the last United States Pharmacopœia; our process is almost identical with the American, and both are imitations of Rigollot's mustard leaves, which have been in considerable demand.

It will require dexterity and practice before one can make the elegant leaves of the French manufacturer.

The American Pharmacopœia directs the spreading of the solution of gutta-percha and mustard with a brush, while the British Pharmacopœia, with the same viscidity of the gutta-percha solution, directs the passing of the paper on one side over the mixture.

Chloral Hydras.—Although known to the chemist from the earlier days of Liebig, still it was not until some four years since that it was brought forward as a remedial agent. It has been in large demand (not in the quantities the newspapers stated), and although perhaps less is used now than a year since, still my own observation convinces me that it is maintaining its ground. At first our market was wholly supplied from the Continent, but eventually, thanks to the enterprise of an English firm of manufacturing chemists,* it was produced at home.

Its import in considerable quantity was viewed with a jealous eye by the Customs, who attached a duty of fifteen pence per pound to it.

For a considerable period the chloral hydrate of pharmacy was wholly found in masses; now, however, detached crystals, ranging from the size of large crystals of sulphate of magnesia to those of chlorate of potash, are met with; but these are wholly of continental manufacture. I am informed that English makers, presuming that these are now required by the description given in the addendum of chloral hydrate, are quite prepared to undertake their manufacture.

The Pharmacopœia Committee does not undertake to be a manufacturer's encyclopædia, still it would, I think, have been advisable to state the particular liquid from which chloral hydrate may be crystallized.

The characters and tests enumerated are ample to decide the purity of good chloral hydrate, the boiling point of 205° and Wood's quantitative chloroform test (PHARM. JOURN., March 4th, 1871) being those chiefly to be relied upon.

Extractum Glycyrrhizæ Liquidum is certainly a preparation of which both prescribers and dispensers stood in need.

* Foot, Barrett & Temple, Battersea.

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When it was first introduced to our notice within these walls by Professor Redwood, who at the same time brought forward other United States' Pharmacopœia preparations, we were told that glycerine and proof spirit would be the liquids by which the fluid extract would be preserved, and that the starting point would be extract of liquorice, and not liquorice in powder as there directed. It appears, however, to have been decreed that we shall not be afflicted with "the glycerine mania" prevalent on the other side of the Atlantic, for the glycerine has been discarded, the extract of liquorice replaced by the root, and the spirit only retained, and that in very small quantity.

That a fluid extract shall be made from the root direct is certainly more like "artistic pharmacy" than dissolving the extract in water. That there will be no lamentation over the rejection of the glycerine few will question, but that the preservative action of 11 per cent. of rectified spirit will be sufficient to prevent acetous fermentation I much question. Time and observation only will decide this matter. Experiments I have made with this fluid extract give the following results from 100 parts:—

Dried Liquorice Root	100	parts.
Solid Extract (B. P.)	26	"
Extract Fluid (sp. gr. 1·160)	56	"
Extract Glycyr. Liquid, B. P.	61	"

This latter, when complete, has a specific gravity of 1·130, which information might have been appended with advantage to the Pharmacopœia description, thereby giving one an opportunity of determining what the density of the completed extract should be.

Gutta-percha is a body with which pharmacists hitherto have not had experience. I would call attention to the impurity of much of the gutta-percha of commerce, and the variation of 100 per cent. in price.

Hydrargyri Oxidum Flavum is a preparation with which we have been for some time familiar, not only for use in ointments, but as the mercuric oxide used in the preparation of the valuable oleates of mercury.

These latter, perhaps, may find favour on a future occasion, when they have been more extensively tried, and when the oleic acid of pharmacy is other than the rough oleic acid of the candle factories.

Injectio Morphiæ Hypodermica is a preparation of which various solutions have from time to time been used, the weakest being probably the officinal solution, and the strongest one of ten grains to the fluid drachm. This latter is the one prescribed in Squire's work on hospital formulæ, and has perhaps been more generally used than any other. The preparation now offincinal has a strength of five grains to the fluid drachm.

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I confess I am an admirer of the method by which this solution is directed to be made; it is practically and theoretically sound and likely to produce uniform results, provided always that its preparation by a good manipulator can be ensured.

I have, however, my misgivings on this point, and imagine that frequently such good results will not be obtained as might have been expected had the solution been directed to be prepared from acetate of morphia direct, even with all its faults, and more especially if required hurriedly, which will doubtless often be the case.

I had almost made up my mind that at any rate for all things now in medicine, we should count by ten and not by twelve; had we done so in this instance, we should have had a solution of one grain in ten minims, the continental pharmacist would then have been able to almost "run and read," as it were, and dispense easily his decigramme of morphia salt to his c.c. of solution when an English prescription was presented.

(To be continued.)

ON THE YIELD OF EXTRACTS.*

H. Werner has compiled, according to his own and the researches of others, the following table. He aims to prove by this comparison, that, supposing a uniform and careful manner of preparation—the indigenous vegetables differ in their yield according to the soil, and that foreign drugs are not always found in commerce of standard quality. Concerning his labors he premises the following notes:

Extr. Aloes was prepared by boiling aloes lucida in small pieces till the liquid appeared quite homogeneous, when after standing for 48 hours the resin had subsided very nicely, and the strained liquor was evaporated.

Extr. Ætheræ are prepared in a displacement-apparatus, by pouring on ether three times, the last portion of which instead of being recovered by pressure, is displaced by water.

Only drugs of the best quality were used for extraction, by which perhaps some differences of the table may be explained; regarding Extr. Opii the author remarks expressly, that in spite of using the best dry Smyrna Opium, the quantity he obtained never amounted to 50 per cent. The large differences which exist in Extr. Jugland cort. sicc. and Extr. Rubiæ tinctor. between the results of Hager and those of the author, are to the latter inexplicable.

* Neues Jahrb. f. Pharm., Sept., 1873; translated in the Pharmacist and Chemical Record.

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	HAGER.	KOSTLA.†	WERNER.
Extr. Aloes	45,0	50,0	60,0
" " acid sulf. corr	—	—	70,0
" Arnicæ rad	30,0	—	20,0
" Aurant Cort	—	—	41,0
" Bellad. e. hb. rec	4,5	—	2,3
" Calabar. fabar	—	—	7,0
" Calendul. e. hb. rec	4,0	—	2,3
" Campech. ligni	10,5	7,0	11,0
" Cardui benedicti	22,5	34,0	22,0
" Cascarillæ	16,5	8,5	14,0
" Catechu aquos	—	54,0‡	28,0
" Centaurii	25,0	25,0	17,0
" Chelidonii e. hb. rec.	5,0	—	3,0
" Chinæ fusc. fr. par	12,0	15,0	15,0
" Chinæ fusc. P. Germ	—	14,0	16,0
" Chinæ reg. fr. par	—	8,5	17,0
" Cinæ æther	20,0	—	20,0
" Coffea	—	—	10,0
" Colchi sem. acid	—	25,0	20,0
" Colocynthid	18,0	32,0	24,0
" Colombo	11,0	10,0	11,0
" Croci	50,0	—	62,0
" Cubebar. æther	17,5	—	26,0
" Digital. e. hb. rec	5,5	—	4,5
" Dulcamaræ	15,0	16,0	20,0
" Ferri pomati	—	4,5	6,5
" Filicis æther	10,0	—	6,5
" Frangulæ cort	—	—	35,0
" Fumariæ	20,0	—	24,0
" Gentianæ	33,0	27,0	28,0
" Granat. cort. spir	20,0	—	24,0
" Gratiolæ e. hb. rec	5,0	—	2,0
" Guajaci ligni	3,0	—	2,0
" Helenii Ph. Germ	—	31,0	33,0
" Humulii lipulii spir	20,0	—	20,0
" Hyoscyami e. hb. rec	3,5	1,2	2,3
" Ipecacuanhæ	—	—	5,2
" Jugland fol. sicc	—	—	33,0
" Jugland cort. nuc	20,0	—	50,0
" Lactucæ viros. e. hb. rec	4,0	—	2,3
" Mezerei spir	9,0	—	9,0
" Myrrhæ	38,0	50,0	60,0
" Nicotianæ e. hb. rec	—	—	4,5
" Opii	50,0	51,0	45,0
" Pimpinellæ	16,0	20,0	27,5
" Polygalæ	30,0	—	30,0
" Pulsatillæ e. hb. rec	5,0	—	5,0
" Quassiæ ligni	7,5	3,0	4,0
" Ratanhæ	17,0	12,0	11,0
" Rubiæ tinctor	18,0	—	50,0
" Sabinæ	20,0	—	25,0

† Archiv der Pharmacie 148, 218.
‡ Probably Alcoholic.

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	HAGER.	KOSTLA.	WERNER.
Extr. Saponar	35,0	——	50,0
" Scillæ Ph. Germ	37,0	——	40,0
" Secalis cornut. Bonj.	15,0	14,0	2,00
" Strychni opir	7,0	10,0	6,5
" Senegæ	33,0	23,0	25,0
" Sennæ	28,0	——	35,0
" Taraxaci sicc	——	22,0	25,0
" Taraxaci e. hb. rec	——	5,0	5,0
" Trifoli	25,0	34,0	32,0
" Valerian. Ph. Germ	15,0	——	22,0

ON LOZENGES.

These medical sweatmeats are thus spoken of by Dr. Prosser James, in a lecture reported in the *Medical Press and Circular*:—

"Lozenges may be looked upon as the modern representatives of the ancient class of remedies termed 'hypoglottides,' and which Galen, Dioscorides, and others were accustomed to prescribe. The name was derived from the dose being placed under the tongue of the patient.

"The attention bestowed on the precess of deglutition in connection with gargling precludes the necessity of considering it in reference to lozenges. The local effect of certain substances on the mucous membrane is often obtained by the employment of lozenges, which should always be allowed to dissolve in the mouth without breaking them by the teeth, and should also be swallowed very slowly, so as to prolong their action as much as possible. It is, however, to be remembered that as lozenges are swallowed their effect on the stomach is not to be forgotten. Indeed, their liability to interfere with digestion is one of their disadvantages. Some lozenges, as those containing morphia for instance, are also used for their general effects. In the British *Pharmacopœia* there are ten formulæ for lozenges. Some, as those of tannin and chlorate of potash, most useful locally; others, as those of iron and opium, for their effects on the system. The hardness of these lozenges is sometimes an objection. To overcome this, at the Hospital for Diseases of the Throat the lozenges are made of fruit paste, such as is used in the currant lozenges to be found everywhere.

"I have had lozenges made like the ordinary jujubes. The *pate de guimauve*, so common in France, and indeed all the elegant forms of French Pharmacy, may be made equally serviceable. The most useful additions to the lozenges of the British *Pharmacopœia* are astringents. Of these krameria is one of the best, as its remote effects are less marked than those of other astringents. In tonsilitis, guaiacum has been strongly recommended by Sir T. Watson and others, and can be given in the form of lozenges."—*Phila. Med. and Surg. Rep.*

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BALSAM OF SULPHUR.*

(Ol. Lini. Sulphuratum.)

BY HENRY KERBER.

Balsam of Sulphur, though not officinal in our Pharmacopœia for a number of years, is still used in large quantities, especially in the country, and in the manufacture of Harlem Oil. It is really a blessing to pharmacists that this preparation has been made unofficinal; for, among all the preparations, we can hardly think of one with a more disgusting odor than that of the Balsam of Sulphur; and whoever has made it once will never forget this odor, but will think of it for years with a horror of its manipulation.

For the preparation of this balsam one gallon Raw Linseed Oil and one quart of Malaga Olive Oil are heated in an iron or brass kettle, holding three or four times the quantity of the oil used, over a charcoal furnace, at the temperature of about 300° Fahr. or near the boiling point, which temperature is indicated by the peculiar odor of the vapors arising from the decomposition of the oils; then adding two pounds of dry flour of sulphur, in small portions, say ½ oz. from time to time, constantly stirring with a wooden spatula until portion after portion is dissolved.

As the vapors are inflammable, care should be taken to have a tight lid, or a few wet towels at hand to extinguish the flames if necessary. At first the oils retain their yellowish color, but after three-fourths of the sulphur has been used the mixture turns darker. The sulphur dissolves easily in the oils, but if the temperature has not been raised to 480° Fahr., will partly separate from the oils, after cooling, in the form of a crystalline powder, the balsam remaining liquid and dissolving incompletely in oil of Turpentine.

If the oils are heated above this temperature, not necessarily to the boiling point, (600° Fahr.) the sulphur will become amorphous or go into the Gamma modification, and will remain there perfectly dissolved.

A seething is only to be feared after three-fourths of the sulphur has been used, and when by stirring it can be felt that the oils are getting thick at the bottom of the kettle. It should then be taken off the furnace, the remainder of the sulphur gradually added and stirred diligently.

Another vessel should be at hand so that if it shonld foam over the balsam may be caught.

Having all the sulphur in, the critical moment is at hand. The reaction upon the oils, which have not only dissolved the sulphur, but have also entered into a chemical combination with it, then begins, and generates such a heat that a seething, and if the kettle be on the furnace too long, a foaming over of the substance takes place.

*Pharmacist and Chemical Record.

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Letting it quietly run into the other vessel until the reaction is over, a gelatinous mass will be found on cooling, which should be mixed with an equal quantity of Raw Linseed Oil, and again heated until it has dissolved. Then strain through a sieve. This on cooling forms an empyreumatic, odoriferous, honey-like fluid, which upon being mixed with Oil of Turpentine forms a clear liquid.

Harlem Oil is simply a mixture of one part Balsam of Sulphur with three parts of Oil of Turpentine. It is used internally in diseases of the kidneys, chronic catarrh, pulmonary complaints, and generally in all complaints where Oil of Turpentine is indicated. On account of its acrid taste and disgusting odor it should only be used for beasts and not for mankind.

ON THE LOSS OF WEIGHT BY THE DRYING OF AIR-DRY DRUGS.*

BY GEORGE W. KENNEDY, G.P.

In the April number of the *Journal* of 1872, page 156, will be found an article by the writer on the amount of moisture contained in air-dry drugs. The experiments were made during the months of January and February, and only show the loss and re-absorption for those two months.

That examination is inadequate as a guide for the year, as some months are wet and others more dry, necessarily causing the drug to vary in the amount of moisture it contains.

Prof. Maisch suggested to me the importance of making a series of experiments with a number of drugs in each month during the year, for the purpose of ascertaining how much they would vary during wet and dry weather, and thus to determine the importance of using only drugs that are thoroughly dried in the manufacture of the many galenical preparations, and especially tinctures, syrups and fluid extracts and the like, which must vary in strength as made from anhydrous or merely air-dry drugs. I give below the results of my experiments, commencing with January, and continuing during the year till December, 1873.

The operation was conducted in the following manner: The drug was weighed from the stock on hand about the first of each month, and then exposed to a heat of about 110° Fahrenheit in a common cooking stove oven until it ceased losing weight. The loss was noted, and the material was then exposed to the atmosphere until the end of the month, when it was re-weighed in order to find out how much moisture had been re-absorbed during the month. It will be found upon examination that the quantity of moisture lost and re-absorbed varies considerably, owing to the condition of

* From the American Journal of Pharmacy.

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the weather at the time when the drug was weighed; for instance, supposing at the first of the month the article was weighed in dry weather, the loss in moisture was invariably smaller than if it were weighed in rainy weather; then again at the end of the month, when the drug was re-weighed in wet weather, the amount of moisture re-absorbed was always larger.

The figures presented by the writer are as correct as they possibly can be, care having been taken to avoid the loss of material on the one hand, and excessive contamination with dust on the other hand. Sometimes two or three experiments in drying, etc., were made in order to satisfy myself that the results were correct.

In the following tables the I column for each month indicates the actual weight obtained from 100 parts of the drugs after drying as indicated above; the II column shows the actual weight of the same material at the end of the month; the difference between these and the first figures indicating the amount of moisture re-absorbed during the month. The remarks, Dry, Wet, etc., at the head of each column, describe the weather on the day the weight was taken:

DRUGS.	JANUARY.		FEBRUARY.		MARCH.		APRIL.		MAY.		JUNE.	
	I.	II.	I.	II.	I.	II.	I.	II.	I.	II.	I.	II.
	Dry.	Dry.	Dry.	Wet.	Damp	Dry.	Show-ery.	Dry.	Dry.	Dry.	Dry.	Wet.
1. *Roots and Rhizomes*												
Colchicum	88·00	97·15	88·20	96·60	88·00	96·00	88·20	96·00	88·90	96·80	88·60	98·50
Gentiana	89·00	97·50	89·60	98·25	88·90	97·15	89·10	96·77	89·50	97·10	89·20	98·00
Lappa	88·00	96·80	88·00	97.10	87·40	95·80	88·00	96·20	88·20	96·60	88·00	97·00
Podophyllum..	88·80	97·05	88·90	97·30	87 80	96·70	88·25	96·05	88·80	96·60	88·50	97·10
Rheum	89.20	97·45	89·00	96·50	87·90	97·10	88·20	96·80	89·15	96·40	89·75	97·85
Senega	89·55	97·45	88·80	97·30	88 10	96·85	89·10	96·00	89·75	97·25	89 65	98·45
Serpentaria ..	88·75	97·00	88·40	97 35	87·00	96·10	87·90	96·15	88·75	96·90	88·00	97·00
Taraxacum....	88·00	96·33	88·00	97·80	86·00	95·00	86·40	95·15	87·00	95·40	86·80	96·55
Valeriana	89·10	97·10	88·75	97·85	87·90	96·00	88·80	96·30	89·00	96·20	88·50	97·00
2. *Barks.*												
Cinchona rubra	89·80	97·30	89·30	97·70	88·10	96·00	88·80	95·20	89·00	95·00	89·00	96·90
Cinnamomum ..	89·10	96·98	89·00	97·75	88 00	96·10	88·50	96·50	88·90	96·00	80·80	97·30
Prunus Virgin..	89·67	97 57	89·60	98·00	88·50	96·70	89·25	96·65	89·20	96·70	89·70	97·70
Sassafras	89 25	95·35	89·00	97·90	87·20	95·00	89·10	96·45	89·00	94·20	89·00	97·20
3. *Leaves.*												
Aconitum	87·00	95·25	88·00	97·00	86·50	95·00	87·00	95·10	88·00	96·00	87·80	96·70
Belladonna ..	86·25	95·25	87·50	96 75	85 60	94·70	87·00	95·20	88·50	96·60	89·00	97 95
Buchu	88·75	96·45	89·00	97·50	87 80	96·30	89·00	96·20	89·25	96·15	89·00	97·75
Digitalis	88·00	96·00	88·75	97·75	86·00	95·05	87·50	95·50	88·50	95·50	88·00	97·00
Hyoscyamus ..	88·00	96·20	88·00	97·10	87·20	95·95	88·10	96·30	88·25	96·25	88·20	97·20
Senna Alex ..	88·20	96·00	88·25	96 65	86·80	94·40	89·00	96·80	89·00	96·25	88·75	97·95
Uva ursi	89·67	97·07	89·00	97·90	88·80	97·00	89·25	86·85	89·20	96·60	89·60	98·35
4. *Flowers.*												
Anthemis	90·00	97·10	89·00	97·65	88·40	96·80	89·25	96·95	89·80	97·10	89·75	97·85
Arnica.....	89·75	97·25	89·20	97·30	88·70	96·37	89·00	96·50	90·00	97·50	89·75	97·70
5. *Seeds.*												
Colchicum	89·75	97·75	90·00	98·00	88·20	96·20	88·80	96 20	89·00	96·25	89·20	97·30
Stramonium ..	91·40	98·40	90·00	97·00	89·80	96·70	89·60	96·45	90·00	96·00	90·00	98·00

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DRUGS.	JULY.		AUGUST.		SEPTEMBER.		OCTOBER.		NOVEMBER.		DECEMBER.	
	I.	II.	I.	II.	I.	II.	I.	II.	I.	II.	I.	II.
	Dry.	Very Wet.	Wet.	Wet.	Dry.	Dry.	Damp	Wet.	Dry.	Dry.	Dry.	Wet.
1. *Roots & Rhizomes.*												
Colchicum	88·80	98·80	87·70	98·25	88·20	97·20	88·00	97·75	88·25	96·35	88·70	98·30
Gentiana	89·20	98·00	87·90	97·50	89·20	98·00	88·25	99·45	89·60	97·45	89·60	98·00
Lappa	88·20	98·20	87·00	98·00	88·35	97·15	87·80	97·90	88·25	95·85	88·80	98·45
Podophyllum..	88·10	97·70	87·25	98·00	88·75	97·65	88·15	97·50	88·75	96·25	88·90	98·00
Rheum	89·60	98·30	87·20	97·95	88·75	96·75	88·20	97·70	89·10	97·00	89·75	98·75
Senega	89·25	98·65	88·20	98·40	88·90	97·30	88·20	97·60	88·90	96·20	89·10	98·60
Serpentaria ..	88·80	97·90	86·75	96·00	88·20	96·45	88·00	97·10	88·75	96·65	88·85	98·60
Taraxacum ..	86·90	96·90	84·40	95·90	86·50	95·60	84·75	93·75	87·10	95·50	86·80	97·90
Valeriana	89·00	97·65	87·80	97·80	86·50	96·70	88·10	97·60	89·00	97·05	88·90	98·40
2. *Barks.*												
Cinchona rubra	89·75	97·60	87·80	96·90	88·90	96·70	88·50	97·25	89·00	94·40	89·20	97·20
Cinnamomum..	88·80	97·55	88·25	98·00	89·00	97·20	87·90	97·90	88·80	96·40	88·90	98·70
Prunus Virgin..	89·25	97·25	89·00	98·70	89·50	97·90	88·00	97·25	89·00	96·50	89·15	98·65
Sassafras	88·90	97·50	87·90	98·00	88 80	96·95	87·75	97·35	88·90	96·00	89·00	98·15
3. *Leaves.*												
Aconitum	88·20	98·20	87·00	97·75	88·10	97·30	87·50	97·50	88·00	96·15	88·50	98·50
Belladonna ..	88·75	98·55	86·25	96·75	88·75	97·80	87·20	97·70	87·90	96·15	88·40	98·60
Buchu	89 30	98·20	87·90	97·40	88·90	97·65	88·10	97·00	89·00	97·00	89·00	98·70
Digitalis	88·25	97·75	86·75	97·75	88·00	97·00	87·00	97·20	88·00	96·10	89·00	98·50
Hyoscyamus ..	88·25	98·00	87·00	97·25	88·00	96·90	87·60	97·20	88·00	96·25	88·20	98·00
Senna Alex ..	90·00	98·00	87·00	97·20	89·00	96·85	88·20	97·20	88·40	96·30	89 00	98·75
Uva ursi.....	89·60	98·10	88·00	97·20	89·10	97·35	88·50	97·00	88·75	96·15	88·80	97·20
4. *Flowers.*												
Anthemis	89·67	97·67	88 75	97·75	89·75	97·65	89·00	97·25	89·00	96·20	89·25	98·25
Arnica.....	89·40	98·15	88·65	97·75	89·35	96·50	88·50	97·70	88·90	96·40	89·40	98·50
5. *Seeds.*												
Colchicum	89·90	98·00	88·50	97·00	89·50	97·60	88·80	96·90	89·50	96·65	90·00	98·20
Stramonium ..	89·80	98·20	89·65	97·40	90·00	98·00	89·60	97·80	90·10	97·20	90·20	98·20

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Editorial.

THE TARIFF.

The recent changes in Customs and Excise duties apply to all classes of drugs and will have the ultimate effect of necessitating a general advance in prices. It is, however, probable, that with some classes at least, retailers will, for the time, gain an advantage, as the bulk of stocks on hand will be sold at calculations based on cost. This more especially applies to articles included in the special category of *drugs;* which, under the old tariff, were required to pay a duty of 15 per cent., and have now suffered an advance of 2½ per cent.

The extensively used class of *dye woods*, formerly admitted free, is now rated at 17½ per cent. This attempt at protection is supposed to have been made in the interest of an eastern manufacturer, and appears to be an ill-advised step. Dyewoods are very low in price, and require to be sold on the best terms, and should be handled as little as possible. It is, therefore, apparently prejudicial to the general interest that, for the sake of encouraging one factory, these goods should have to pay perhaps 10 per cent. of their value in the shape of freight to the place of manufacture ere being distributed to their places of consumption.

The duty on perfumery, in bottles, is increased to the extent of 12 cents per dozen, and the purchaser will have to pay that additional cost. Perfumes, in bulk, formerly paying $1,25 per gallon, have been increased 30 cents.

The excise charges on alcohol have been raised from 63 to 75 cents per gallon of proof strength. This will advance the price of commercial alcohol of 65 over proof, 21 cents per gallon. Tinctures, and other alcoholic preparations, will, of course, have to sympathize with this, and buyers will probably now have to pay for the stronger alcoholic tinctures, three cents additional per pint; and for tinctures of proof strength, two cents per pint. Fluid extracts and essences will advance proportionately; and, by the same rule, spirits of nitre will command an advance in price of five cents per pound.

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A DISPENSER'S RESPONSIBILITIES.

A few weeks ago one of our city druggists was requested to dispense, for a lady suffering from neuralgia, the following prescription:

℞ Iodine..... gr. vj.
Pot. Iodidi..... ʒj.
Fowler's Sol. Arsenic ..... ʒss.
Syrup. Simplex ..... ʒviiss.
M.—A teaspoonful to be taken twice a day.

It appears that the prescription was not originally intended for the patient in question, at least not at this time, but as it had been given by a regular practitioner, and had been found a serviceable remedy, it was, at the request of the patient's son, repeated. This occured during the absence of the family physician, but, just as the medicine had been sent home, the doctor returned to town, was called in, and, in due course, the medicine was shown to him. On examining the prescription he affected great concern, declaring that had his patient taken the medicine it would have killed her in one hour. This startling assertion had the natural effect of arousing the feelings of the patients and her friends, who were loud in their condemnation of the druggist who had been so careless as to dispense, without a word of warning, a medicine of so frightfully fatal a potency. This censure was not long in finding its object, and, as may be supposed, was the means of arousing much indignation. Explanations followed, and, after some investigation, the patient's friends were satisfied, not only that their charges were unfounded, but that the doctor's statements could not be corroborated. Smarting under this attempt to deprive him of an old and valued circle of customers, the druggist obtained legal advice, which resulted in the sending of a lawyer's letter demanding the retraction of the statements in question. To this the doctor pays no attention; and we understand that stronger measures, in the form of an action for damages, are now about to be instituted against him.

Had this been the mere extent of the case we should have simply rated the doctor's statements as originating in ignorance or malice, and have deemed the whole matter unworthy of our notice; or to be better disposed of with contempt or redress, as the spirit of the aggrieved party might dictate. But, at this juncture, we find the *Canada Lancet* appearing upon the scene, and with

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more regard to partizanship than good sense, espousing, with considerable warmth, the doctor's cause.

Our contemporary not only supports the assertion that the medicine was dangerously poisonous, but avers that, had evil consequences ensued from its administration, the dispenser should be held responsible. In addition to this, we are informed that, if the Pharmacy Act be properly interpreted, all poisonous substances, even when dispensed by prescription, should be labeled "poison, in large letters;" and for this omission the druggist was also culpable and should be held responsible.

These conclusions are, each and all of them, so palpably absurd and contrary to good sense, justice, and law, that it is needless for us to enter into their refutation in anything like an argumentative spirit; we shall, therefore, merely enumerate the errors into which our contemporary has fallen.

By reference to the prescription it will be seen that six grains of iodine, and half an ounce of Fowler's solution—equal to two grains of arsenious acid—are contained in an eight ounce mixture, containing sixty-four doses. This gives, to each dose, about one-tenth of a grain of iodine, and one-thirtieth of a grain of arsenious acid. Ordinary doses of these substances may be stated at half a grain of the former and one-twelfth of a grain of the latter. That the small doses ordered to be given would have produced fatal results, even to the weakest patient, is simply ridiculous and may so be dismissed.

Again, our contemporary says that had evil consequences resulted, the druggist should have been held responsible. Under ordinary circumstances, the responsibility rests with the prescriber; but, in this instance, neither the prescriber or dispenser could be held liable, as the prescription was furnished by a third party, who, in having it dispensed, incurred the responsibility. It is plainly no part of the duty of the dispenser to make himself acquainted with the patients for whom he prepares medicine, provided such medicine is ordered by the prescription of a legally qualified practitioner.

The labelling of all poisonous substances, whether ordered by prescription or otherwise, "with the word *poison*, in large letters," is certainly a new requirement of the Pharmacy Act. The Act does not require *all* poisonous substances to be labelled, but only such as are enumerated in a schedule; it does not require *any* to be labeled "in large letters;" nor do the restrictions of the Act extend to the

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supplying of patients with medicine. This will be evident from a careful reading of the twenty-eighth section. But even if such were required, it could not be carried out in practice, and we fancy that if the interpretation of the Act, as given by the *Lancet*, were adopted, our contemporary would be one of the first to find fault, and in this would be joined by the entire medical profession.

We should have been glad to have let this matter rest with the parties concerned, but as the *Lancet* has made the discussion public, and has, moreover, made the circumstance the occasion of raising new issues affecting the community which we represent, we have been compelled to make these explanations.

THE MEDICAL ACT AS AFFECTING DRUGGISTS.

The recently passed Medical Act underwent, in its passage through the Legislature, so many changes, that we doubt not but many of our readers have lost track of the portions which bear upon the interests of druggists. We therefore transcribe from the Act, as now printed, the following extract:

"*Sec.* 35. No person shall be entitled to recover any charge in any court of law for medical or surgical advice, or for attendance, or for the performance of any operation, or for any medicine which he shall have prescribed or supplied, unless he is registered under this Act: Provided this clause shall not extend to the sale of any drug or medicine by any duly licensed chemist or druggist."

We have not been able to find anything other than this which affects our legitimate interests, but it may be interesting to give a portion of the Fortieth section:

"It shall not be lawful for any person not registered to practice physic, surgery, or midwifery in the Province of Ontario for hire, gain or hope of reward; and if any person not registered under this Act shall for hire, gain or hope of reward practice or profess to practice physic, surgery or midwifery, or advertise to give advice in physic, surgery or midwifery in the Province of Ontario, he shall upon a summary conviction thereof before any justice of the peace, for any and every such offence, pay a penalty not exceeding one hundred dollars nor less than twenty-five dollars:

2. Any person who shall wilfully or falsely pretend to be a physician, doctor of medicine, surgeon or general practitioner, or shall assume any title, addition or description other than he actually

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possesses and is legally entitled to, shall be liable on conviction thereof before any justice of the peace to a penalty not exceeding fifty dollars, nor less than ten dollars:

3. Any person not registered under this Act who shall take or use any name title, addition or description implying or calculated to lead people to infer that he is registered under this Act, or that he is recognized by law as a physician, surgeon, accoucheur, or a licentiate in medicine, surgery or midwifery, shall be liable upon a summary conviction thereof before any justice of the peace to pay any penalty not exceeding one hundred dollars, nor less than twenty-five dollars."

STUDENT'S DEPARTMENT.—The gentleman upon whom we were depending for a continuation of the papers on Botany has failed in sending in his communication in time for this issue, but it will appear in next number.

Editorial Summary.

Disinfection of Water Closets.—As druggists are frequently require to supply materials for this purpose, it may be interesting to note the results obtained from a number of experiments made by A. Eckstein, of Vienna, and alluded to by Dr. A. W. Miller, (*Am. Jour. Pharm.*) in a lengthy article on Disinfectants and Deodorizers. Eckstein experimented for two years with the privy of his house in Vienna, which was frequented by at least one hundred persons daily. He successfully tried a great number of chemicals in various methods, with the following results: 1st. When an aqueous solution of two pounds of iron sulphate was poured into the well, the odor of sulph-hydric acid was eliminated for several hours. After this time all unpleasant odor had disappeared, but within twelve hours the effect of the deodorizer was no longer perceptible. 2nd. A solution of sulphate of copper behaved in the same manner. 3rd. Two pounds of iron sulphate in crystals exerted a deodorizing effect for two entire days; the same amount of copper sulphate in crystals gave analogous results. 4th. Two pounds of disinfecting powder, composed of a mixture of iron and copper sulphates with carbolated lime, acted for only two days. 5th. Sulphurous acid, in a liquid form, was found to be rapidly effective, but it proved to be very troublesome to the organs of respiration for an hour, and it was dis-

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sipated within twenty-four hours. 6th. One ounce of red carbolic acid disseminated a very unpleasant tarry odor throughout the entire house for two days, so that its true effects could not be estimated, as one fetid odor was concealed by a still worse one. 7th. Two pounds of iron sulphate in crystals were introduced into a parchment bag and put into the cesspool. No result was observed until after two hours, and but little sulph-hydric acid was eliminated. The place was thoroughly deodorized for three full days. When the parchment bag was removed it contained only a turbid, but almost inodorous, liquid. 8th. Two pounds of commercial chlorinated lime, of high test, enclosed in a parchment bag, began to deodorize within two hours after being deposited. It did not in any manner inconvenience either the respiratory or the olfactory organs, while its action extended over a period of quite nine days. 9th. Two ounces of crude permanganate of sodium, used by itself in solution, deodorized almost instantly, but all traces of its effects had vanished after twenty-four hours. The same preparation, when enclosed in a parchment bag, was active for two days. These experiments appear to prove conclusively that simple purposes of disinfection, or deodorization, as practically tested by the olfactory organs, the chloride of lime is the best material known. By enclosing it in a bag of parchment, or other suitable material, its effects extend over a greater period of time, and the violence of its action, and the quantity of eliminated chlorine, are so far lessened as not to injure or incommode the resparatory organs. The results obtained by Eckstein have been corroborated by experiments conducted in the official Laboratory, at Dresden, where chlorinated lime, in conjunction with sulphuric acid, was found to be more effectual than any other of the ordinary disinfectants.

Source and Mode of collection of Gamboge.—The following remarks occur in a letter accompanying eight cases of specimens, presented by Robert Jamie, Esq., of Singapore, to the Pharmaceutical Society's Museum, Edinburgh. It will be seen that the mode of collecting gamboge is quite different to that usually given in works on Materia Medica, but we judge there can be no doubt of the reliability of the account. There is also a difference in regard to the localities; according to Mr. Jamie, neither Siam Proper nor Cochin-China proper ever produced gamboge. The Siamese and Cochin-Chinese, at various times, wrested from the Cambogians portions of their territory; and it is from those conquered portions of Cambogia (as well as Cambogia) that the gum resin is prepared for exportation, Saigon and Bangkok being the principal places now of export, though, in former years, the greater part of, if not all, came from some seaport of Cambogia. At present, Kâmpoh is the only seaport

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left to the Cambogians, and what little they now export comes from it. Cambogia, then, is the native place of the gamboge tree, and there it may be said to be indigenous, for the trees there flourish most luxuriantly, without attention or cultivation, in the dense jungles; they must be propagated by means of birds, monkeys, mustangs, and such-like animals, for no trees are ever planted. The best time for collecting the gum resin is a little time after the wet season is over (that season is from about the middle of June till the middle of October), say from February to the end of March, but it extends more frequently till after April, as March and April are very hot months, and the exudation from the trees is not so watery then. When the trees are fit for wounding,—and they are so when their trunks vary from the size of a man's thigh and upwards, the larger the better,—they are wounded by means of a parang, or chopping-knife, in various parts of the trunk and larger branches, when prepared bamboos are inserted between the wood and the bark of the trees, to hold the juice as it flows from the wound. After tying the bamboo cylinders to the trees, for they are tied as well as inserted, they are left there and examined daily till filled, which generally takes from fifteen to thirty days, and sometimes longer, the length of time filling depending on the flow of juice and the size of the bamboo cylinder. When no more is seen exuding, the cylinder and its contents are removed, a fresh wound made in some other part of the tree, and the cylinder reinserted and tied as before; the same process is repeated till the bamboo cylinder is filled, when it is taken to a fire, over which it is gradually rotated till the whole of the water in the gum resin is evaporated, and it gets sufficiently hard to allow of the bamboo being torn off, when it is ready for the commercial world, and, as thus prepared, shows the striated appearance of the bamboo very distinctly.

Adulteration of Oxide of Tin.—Mr. G. Willborn, (*Pharm. Jour. & Trans.*) having had occasion to examine a powder containing several metallic compounds, found a quantity of oxide of lead for which he could not readily account, without supposing it to originate in commercial oxide of tin, one of the articles entering into the composition of the powder. Further experiment justified this conclusion, as three samples of so-called oxide of tin, or putty powder, obtained through commercial sources, gave, on analysis, 5 parts of oxide of tin to 15 of the oxide of lead. The price of the former is about seven times that of the latter, so the adulteration must certainly be profitable to its originators.

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Uncertain Composition of Commercial Fluid Extracts of Cannabis Indica.—Mr. Henry W. Buchanan, (Chicago *Pharmacist*) publishes the result of an examination of the various fluid extracts of Indian hemp, and finds that, of sixteen samples examined the amount of solid extracts in 1000 parts varied from 100·25 to 23·00 parts—only six of the samples gave over 70·00 parts. The amount of resin varied from 74·0 to 17·5; and in one sample no resin whatever was found. The author made a standard preparation from the dried, flowering tops of the plant, using alcohol as a menstruum. From this he obtained 101·00 parts of solid extract and 78.3 of resin.

Registered Pharmacists of Great Britain.—From the recently published Calendar of the Pharmaceutical Society of Great Britain, it appears that the total number of registered chemists and druggists is 13,216 being an increase of 459 over last year. Of these, 10·59 per cent were registered by virtue of having passed the minor examination. In addition to the chemists and druggists, there are upon the register the names of 811 registered apprentices.

Books and Pamphlets.

A TREATISE ON PHARMACY: *Designed as a Text-Book for the Student, and as a Guide to the Physician and Pharmacist.* By EDWARD PARRISH, late Professor of the Theory and Practice of Pharmacy in the Philadelphia College of Pharmacy, etc., etc. Fourth edition; enlarged and thoroughly revised by THOS. S. WIEGAND. Philadelphia: Henry C. Lea. Toronto: Hart & Rawlinson. 1874. 8vo. pp. 977.

It seems almost superfluous for us to notice a work with which our readers are so well acquainted, and the value of which they so well know. We are not aware that there exists in the English language, or indeed in any other, a work so comprehensive, complete, and of such practical utility. In reviewing former editions or reprints, we have found so little with which to find fault that our language has always been that of commendation, nor has our opinion been changed by the frequent reference which has been made to a book which occupies one of the most prominent positions on our shelves.

The fourth edition, which has just been issued, is, in many respects, an improvement on those which preceded it. Although, at the date of publication, the third edition was thoroughly up to the

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times, the rapid advance of pharmaceutical science, and the issue of the United States Pharmacopœia last year, rendered necessary a careful revision and many additions. This work was commenced and carried on by Professor Parrish until the time of his death, in 1872, when the MSS. were handed over to the present editor, Mr. Wiegand, who has faithfully endeavoured to carry out the wishes of his deceased friend, and, as far as we have been able to judge, has done so successfully.

A great portion of the work has been re-written, and the general arrangement of subjects has been changed. About one hundred and fifty pages of new matter, embracing many illustrations, have been added, notwithstanding the care with which unimportant or obsolete details have been omitted.

The new chemical notation and nomenclature have been adoptod, and advantage has been taken of the valuable information comprised in the periodical scientific literature of the past ten years to bring the work up to the most modern standpoint.

REPORT OF THE QUEBEC LUNATIC ASYLUM: *Addressed to the Honorable the Prime Minister of the Province of Quebec, by the Medical Superintendents.*

In a pamphlet of over two hundred pages we have a report of the above institution for the years 1872-3. We have not had time to give it a careful perusal; but from a cursory examination, we judge it to contain not only the details properly belonging to the subject, but much valuable information relating to the medical aspects of insanity, which, to the medical practitioner, will doubtless be found acceptable and useful.

PROCEEDINGS OF THE AMERICAN PHARMACEUTICAL ASSOCIATION, *at the twenty-first Annual Meeting, held in Richmond, Va., September*, 1873. Philadelphia, 1874. 8vo., pp. 710.

There are few works of more interest to the pharmacist than the annual volume of the "Proceedings," and the present issue is in no respect behind its predecessors. We are indeed almost inclined to think that it is the best that has so far appeared. Certainly it is so in extent, and in the number and value of the essays it contains; while in completeness of detail and comprehensiveness of its review of the literature of the year it cannot be excelled.

The minutes of the meeting, which are unusually full, occupy about one hundred pages, while the report on the progress of Pharmacy, containing a summary of pharmaceutical progress for the year, takes up about three hundred pages. In addition to these, we have the usual reports on the Drug Market; on Specimens Exhibited to the Meeting; on Adulterations and Sophistications; on Legislation; on the Pharmacopœia, and on Formulas for Elixirs. The report on the last named subject was issued separately, some

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time ago, and has already appeared in this journal, but is now incorporated with the others.

In addition to these, we have the essays read before the Association. Many of these are very valuable, embodying the result of much patient research, and of a thoroughly practical character.

We heartily commend this work to the notice of our readers, and doubt not but its perusal would not only be directly beneficial, amply repaying the reader, but by arousing a national spirit of emulation, and thus acting as a stimulant on the pharmaceutical energies which now seem well-nigh torpid, would be of no small advantage to the cause to which we are espoused.

Transactions of Pharmaceutical Colleges and Societies.

PHARMACEUTICAL ASSOCIATION OF THE PROVINCE OF QUEBEC.

The annual meeting of this association was held in the Laval University, Quebec, on Tuesday, the 19th May, when the following were elected the Council for the year, namely: Messrs. N. Mercer, H. Lyman, J. Kerry, H. R. Gray, E. Giroux, W. E. Brunet, A. Manson, R. Bolton, J. Harper, J. Goulden, C. I. Covernton, E. Muir. At a subsequent meeting of the Council, held May 26th, the following officers were elected, namely: Henry Lyman, President; H. R. Gray, 1st Vice-President; E. Giroux, 2nd Vice-President; James Goulden, Treasurer; E. Muir, Registrar and Secretary. The following compose the Board of Examiners, A. Manson, H. R. Gray, W. E. Brunet, J. D. L. Ambrose, H. F. Jackson, with the President ex-officio.

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Practical Formulæ

"*Golden Farina*" *Cologne.*—

Tincture of Canada snakeroot	4 ounces.
" Orris root	12 "
Oil of bergamot,	
" lavender,	
" lemon, of each	6 drachms.
Essence of musk,	
Oil of neroli,	
" cinnamon,	
" cloves, of each	1 "
Orange-flower water	8 ounces.
Cologne spirits, sufficient to complete	6 pints.

"*Caroline*" *Cologne.*

Oil of bergamot,	
" lavender,	
" rosemary,	
" lemon, of each	1½ ounces.
" citronella,	
" neroli,	
Essence of musk,	
Oil of cloves, of each	1 drachm.
Alcohol	4 pints.
Rose water	2 "

Dissolve the oils in the alcohol, add the rose water and filter.—*Druggists' Circular.*

Registrar's Notice.

The Annual Register of those Chemists and Druggists, legally entitled to carry on business in the Province of Ontario, will have to be published on the 15th of this month, in accordance with the Pharmacy Act of 1871. Those members who have not paid the Registration fee for the current year are requested to send the amount at once to the Registrar.

GEORGE HODGETTS,
Registrar.

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Drugs, Medicines, &c.	$ c.		$ c.
Acid, Acetic, fort	0 15	@	0 16
Benzoic, pure	0 23		0 30
Citric	1 40		1 50
Muriatic	0 05		0 06
Nitric	0 12½		0 15
Oxalic	0 23		0 24
Sulphuric	0 03½		0 07
Tartaric, pulv	0 50		0 50
Ammon, carb. casks	0 23		0 24
" jars	0 23		0 24
Liquor, 880	0 25		0 28
Muriate	0 14		0 15
Nitrate	0 45		0 60
Æther, Acetic	0 45		0 50
Nitrous	0 40		0 42
Sulphuric	0 50		0 50
Antim. Crude, pulv	0 15		0 17
Tart "	0 55		0 65
Alcohol, 95 per ct.....Cash	1 95		2 05
Arrowroot, Jamaica	0 18		0 22
Bermuda	0 50		0 65
Alum	0 02½		0 03½
Balsam, Canada	0 50		0 50
Copaiba	0 95		1 00
Peru	3 75		4 00
Tolu	1 15		1 20
Bark, Bayberry, pulv	0 20		0 22
Canella	0 17		0 20
Peruvian, yel. pulv	0 42		0 50
" red "	2 10		2 20
Slippery Elm, g. b	0 15		0 20
" flour, packets	0 28		0 32
Sassafras	0 15		0 18
Berries, Cubebs, ground	0 20		0 25
Juniper	0 06		0 10
Beans, Tonquin	0 62		1 10
Vanilla	30 00		30 00
Bismuth, Alb	3 30		4 00
Carb.	3 50		4 00
Camphor, Crude	0 38		0 40
Refined	0 45		0 50
Cantharides	2 40		2 50
Powdered	2 60		2 70
Charcoal, Animal	0 04		0 06
Wood, powdered	0 10		0 15
Chiretta	0 23		0 30
Chloroform	1 00		1 65
Cochineal, S. G	0 75		0 90
Black	1 10		1 20
Colocynth, pulv	0 60		0 65
Collodion	0 70		0 80
Elaterium.....oz	3 20		4 00
Ergot	0 32		0 45
Extract Belladonna	1 50		1 60
Colocynth, Co	1 25		1 75
Gentian	0 50		0 60
Hemlock, Ang	0 00		0 95
Henbane, "	1 50		1 60
Jalap	5 00		5 50
Mandrake	1 75		2 00
Nux Vomic.....oz	0 40		0 50
Opium.....oz	1 50		
Rhubarb	5 00		5 50
Sarsap. Hon. Co	1 00		1 20
" Jam. Co	3 50		4 00
Taraxacum, Ang	0 70		0 80
Flowers, Arnica	0 17		0 25
Chamomile	0 32		0 40
Gum, Aloes, Barb. extra	0 70		0 80
" " good	0 40		0 50
" Cape	0 16		0 20
" " powdered	0 20		0 30
Socot	0 50		1 35
" " pulv	1 00		0 00
Arabic, White	0 70		0 75
" powdered	0 60		0 75
" sorts	0 24		0 30
" " powdered	0 42		0 50
" com. Gedda	0 13		0 16
Assafœtida	0 40		0 42
British or Dextrine	0 13		0 15
Benzoin	0 35		0 75
Catechu	0 12		0 15
" powdered	0 25		0 30
Euphorb, pulv	0 35		0 40
Gamboge	1 40		1 50
Guaiacum	0 95		1 00
Myrrh	0 50		0 85

Drugs, Medicines, &c.—*Contd.*	$ c.		$ c.
Sang Dracon	0 60		0 70
Scammony, powdered	6 00		6 50
" Virg. "	14 50		—
Shellac, Orange	0 80		0 85
Gum, Shellac, liver	0 70		0 75
Storax	0 40		0 45
Tragacanth, flake	1 10		1 75
" common	0 53		0 65
Galls	0 22		0 30
Gelatine, Cox's 6d	1 15		1 20
Glycerine, common	0 25		0 30
Vienna	0 29		0 30
Prices	0 60		0 75
Honey, Canada, best	0 15		0 16
Lower Canada	0 14		0 16
Iron, Carb. Precip	0 20		0 25
" Sacchar	0 40		0 55
Citrate Ammon	1 75		1 80
" & Quinine, oz	0 55		0 58
" & Strychine	0 20		0 25
Sulphate, pure	0 08		0 10
Iodine, good	6 25		7 50
Resublimed	7 25		7 50
Jalapin	1 25		1 50
Kreosote	2 40		2 50
Leaves, Buchu	0 22		0 32
Foxglove	0 25		0 30
Henbane	0 35		0 40
Senna, Alex	0 27		0 60
" E. I	0 14		0 20
" Tinnevilly	0 20		0 30
Uva Ursi	0 15		0 17
Lime, Carbolate.....brl	5 50		—
Chloride	0 05		0 06
Sulphate	0 08		0 12
Lead, Acetate	0 15		0 16½
Leptandrin.....oz.	0 60		—
Liq. Bismuth	0 50		0 75
Lye, Concentrated	1 75		2 00
Liquorice, Solazzi	0 50		0 55
Cassano	0 23		0 40
Other brands	0 14		0 25
Liquorice, Refined	0 35		0 45
Magnesia, Carb..... 1 oz.	0 20		0 25
" ..... 4 oz.	0 17		0 20
Calcined	0 65		0 75
Citrate.....gran.	0 63		0 75
Mercury	1 85		1 90
Bichlor	1 70		1 75
Chloride	2 00		2 10
C. Chalk	0 75		80
Nit. Oxyd	2 10		2 15
Morphia Acet	4 90		5 00
Mur.	4 60		4 75
Sulph	5 00		5 25
Musk, pure grain.....oz	25 00		—
Canton	0 60		1 20
Oil, Amonds, sweet	0 40		0 45
" bitter	14 00		15 00
Aniseed	4 00		4 25
Bergamot, super	7 25		7 50
Caraway	3 20		3 50
Cassia	2 25		2 50
Castor, E. I	0 16		0 18
Crystal	0 22		0 25
Italian	0 26		0 28
Citronella	1 15		1 25
Cloves, Ang	3 00		3 00
Cod Liver	1 05		1 50
Croton	1 75		2 00
Juniper Wood	0 80		1 00
Berries	2 75		3 00
Lavand, Ang.....oz.	0 00		1 00
Exotic	1 40		1 60
Lemon, super	4 50		4 75
ord	3 20		3 40
Orange	3 00		3 25
Origanum	0 65		0 75
Peppermint Ang	15 00		16 00
" Amer	5 00		5 50
Rose, Virgin	8 50		8 75
" good	6 80		7 00
Sassafras	0 75		1 90
Wintergreen	6 00		6 50
Wormwood, pure	4 00		6 00
Ointment, blue	1 30		1 50
Opium, Turkey	0 00		0 00
pulv	00 00		00 00

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DRUGS, MEDICINES, &c.—*Cont'd*	$ c.	$ c
Orange Peel, opt.	0 30	0 36
" good	0 12½	0 20
Pill, Blue, Mass	1 30	1 40
Potash, Bi.chrom	0 18	0 20
Bi-tart	0 33	0 35
Carbonate	0 14	0 20
Chlorate	0 45	0 50
Nitrate	9 00	10 00
Potassium, Bromide	1 00	1 10
Cyanide	0 60	0 5
Iodide	5 75	6 25
Sulphuret	0 25	0 35
Pepain, Boudault's...oz	1 40	—
Houghton's..... doz.	8 00	9 00
Morson's.....oz.	0 85	1 10
Phosphorous	0 95	1 00
Podophyllin	0 50	0 60
Quinine, Pelletier's	—	2 45
Howard's	2 40	—
" 100 oz. case.	2 35	—
" 25 oz. tin..	2 35	—
Root, Colombo	0 13	0 20
Curcuma, grd	0 12½	0 17
Dandelion	0 17	0 20
Elecampane	0 16	0 17
Gentian	0 08	0 10
" pulv	0 15	0 20
Hellebore, pulv	0 17	0 20
Ipecac, "	1 50	1 60
Jalap, Vera Cruz	90	1 15
" Tampico	0 70	1 00
Liquorice, select	0 12	0 13
" powdered	0 15	0 20
Mandrake "	0 20	0 25
Orris, "	0 20	0 25
Rhubarb, Turkey	2 50	2 75
" E. I	1 10	1 20
" " pulv	1 20	1 30
" " 2nd	0 90	1 00
" French	0 75	—
Sarsap., Hond	0 50	0 52
" Jam	0 88	0 90
Squills	0 10	0 15½
Senega	1 00	1 10
Spigelia	0 25	0 30
Sal., Epsom	2 25	3 00
Rochelle	0 32	0 35
Soda	0 02½	0 03
Seed Anise	0 13	0 16
, Canary	0 05	0 06
Card amon	2 25	2 50
Fe ugreek, g'd	0 09	0 10
Hemp	0 06½	—
Mustard, white	0 14	0 16
Saffron, American	0 75	0 85
Spanish	12 00	13 00
Santonine	7 50	8 00
Sago	0 08	0 09
Silver, Nitrate.....Cash	14 85	16 50
Soap Castile, mottled	0 11	0 14
Soda Ash	0 03½	0 05
Bicarb. Newcastle	—	6 5)
" Howard's	0 14	0 16
Caustic.	0 05½	0 05½
Spirits Ammon., arom	0 35	0 35
Strychnine, Crystals	2 25	2 50
Sulphur. Precip	0 10	0 12½
Sublimed	0 03½	0 05
Roll	0 03	0 04½
Vinegar, Wine, pure	0 55	0 60
Verdigris	0 35	0 40
Wax, White, pure	0 75	0 80
Zinc. Chloride.....oz	0 10	0 15
Sulphate, pure	0 10	0 15
" common	0 06	0 10
DYESTUFFS.		
Annatto	0 35 @	0 60
Aniline, Magenta, cryst	2 50	2 80
" liquid	2 00	—
Argols, ground	0 15	0 25
Blue Vitrol, pure	0 09½	0 10
Camwood	0 06	0 09
Copperas, Green	0 01½	0 02½
Cudbear	0 16	0 25
Fustic, Cuban	0 02½	0 04
Indigo, Bengal	2 40	2 50
Madras	0 0	0 95
Extract	0 30	0 35

DYESTUFFS—*Continued.*		
Japonica	0 07½	0 08
Lacdye, powdered	0 33	0 38
Logwood	0 02½	0 03
Logwood, Camp	0 02½	0 3½
Extract	0 10	0 14
" 1 lb. bxs	0 13	—
" ½ lb. "	0 14	—
Madder, best Dutch	0 12	0 14
and quality	0 11	0 13
Quercitron	0 03	0 05
Sumac	0 06	0 08
Tin, Muriate	0 10½	0 12½
Redwood	0 05	0 06
SPICES.		
Allspice	0 11½@	0 12
Cassia	0 35	0 38
Cloves	0 46	0 48
Cayenne	0 28	0 30
Ginger, E. I	0 19	0 20
Jam	0 20	0 30
Mace	1 65	1 75
Mustard, com	0 20	0 25
Nutmegs	1 15	1 20
Pepper, Black	0 22½	0 23
White	0 35	0 36
PAINTS, DRY.		
Black, Lamp, com	0 07 @	0 08
" refined	0 25	0 30
Blue, Celestial	0 08	0 12
Prussian	0 65	0 75
Brown, Vandyke	0 10	0 12½
Chalk, White	0 01	0 01½
Green, Brunswick	0 07	0 10
Chrome	0 16	0 25
Paris	0 30	0 35
Magnesia	0 20	0 25
Litharge	0 07	0 09
Pink, Rose	0 12½	0 15
Red Lead	0 07½	0 08
Venetian	0 02½	0 03½
Sienna, B. & G	0 07	0 08
Umber	0 07	0 10
Vermillion, English	1 85	1 90
American	0 25	0 35
Whiting	0 85	0 90
White Lead, dry, gen	0 08½	0 09
" " No. 1	0 07	0 08
" " No. 2	0 05	0 07
Yellow Chrome	0 12½	0 35
" Ochre	0 02½	0 03½
Zinc White, Star	0 10	0 12
COLORS, IN OIL.		
Blue Paint	0 12 @	0 15
Fire Proof Paint	0 06	0 08
Green, Paris	0 30	0 37½
Red, Venetian	0 07	0 10
Patent Dryers, 1 lb tins	0 11	0 12
Putty	0 03½	0 04½
Yellow Ochre	0 08	0 12
White Lead, gen. 25 lb. tins	2 50	—
" No. 1	2 25	—
" No, 2	2 00	—
" No. 3	1 75	—
" com	1 30	—
White Zinc, Snow	2 75	3 25
NAVAL STORES.		
Black Pitch	4 75 @	5 00
Rosin, Strained	4 50	—
Clear, pale	5 75	7 25
Spirits Turpentine	0 57	0 60
Tar Wood	4 50	4 75
OILS.		
Cod	0 63 @	0 70
Lard, extra	0 85	0 90
No. 1	0 75	0 80
No. 2	0 72	0 75
Linseed, Raw	0 72½	0 75
Boiled	0 77½	0 80
Olive, Common	1 05	1 10
Salad	1 80	2 30
" Pints, cases	4 20	4 40
" Quarts	3 25	3 50
Seal Oil, Pale	0 72	0 75
Straw	0 68	0 70
Sesame Salad	1 30	1 35
Sperm, genuine	2 35	2 40
Whale refined	0 90	0 95

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CANADIAN

PHARMACEUTICAL JOURNAL

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Original and Selected Papers.

ON THE PREPARATION OF MEDICATED WATERS.*

BY JAMES RUAN, G. P.

I desire to present to the consideration of the readers of the Journal the following suggestion for the preparation of the different medicated waters of the U. S. Pharmacopœia which call for the intervention of magnesium carbonate in their preparation; the substance which I suggest to take the place of the latter is paper pulp, prepared from chemically pure filtering paper.

The following is the "modus operandi," which I find yields very satisfactory results:—

To prepare Aqua Menthæ Piperitæ—

Take of the Oil of Peppermint, half a fluidrachm.
Chemically pure filtering paper, one drachm.
Distilled water, two pints.

The paper is cut into small pieces and beaten up in a mortar with one ounce of water gradually added until reduced to a pulpy consistence; the oil is then added and triturated with the pulp until incorporated; fifteen ounces more of water is to be gradually added;

*From the *American Journal of Pharmacy*.

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the whole is then poured into a suitable sized bottle, the mortar rinsed out with the remaining pint of water, which is added to the first. The whole is then to be well shaken and then filtered through paper.

In the same manner prepare other aquæ medicatæ, which call for the intervention of magnesium carbonate. Peppermint water, prepared as above, is strongly impregnated with the oil, and beautifully transparent. Some which I had prepared over three weeks is still clear, with no appearance of sediment or separation of the oil.

Aqua Cinnamomi, prepared by the above process, is perfectly colorless, with the odor and taste strongly defined.

In the preparation of the waters by the above process, it is well to allow them to stand a few hours before filtration, occasionally shaking so as to thoroughly disseminate the pulp through the water, thereby giving the water greater surface to act on. I think the waters prepared according to the described manner equal to the distilled. The filters can be reserved for making additional pulp. I am not aware that the process I have described has been used before, and as the results have been so satisfactory in my case, I thought I would present the process to the Journal for publication.

I have prepared Aqua Camphoræ by the same process, first reducing the camphor to fine powder by alcohol, and proceeding as with the others.

Philadelphia, March 19, 1874.

THE BRITISH PHARMACOPŒIA ADDENDUM.

BY C. UMNEY.

(*Continued from page* 401.)

Laricis Cortex is ordered for the production of tincture of larch bark, not altogether unknown in pharmacy. At the present time two or three spurious larch barks are to be found in trade. I have not had an opportunity of comparing them, but Mr. Holmes has kindly done so, and reports that the specimen (B) closely corresponds with that in the Society's Museum.

Liquor Gutta-percha.—This solution is introduced as a vehicle for the powder of black mustard in making the Charta Sinapis.

The formula is identical with that given in the recent edition of the United States Pharmacopœia. If gutta-percha is of good quality and thinly cut, as the Phamacopœia directs, its solution is most easily effected.

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The carbonate of lead acts as a mechanical purifier, and answers the purpose excellently well.

Had benzol been officinal, doubtless it would have replaced chloroform in this preparation.

Liquor Magnesiæ Citratis is introduced as a preparation containing true citrate of magnesia, and is made by a modification of the French Codex process for purgative lemonade. The carbonic acid is generated from acid carbonate of potassium; the Codex directs the use of the corresponding soda salt. The water thereby charged with carbonic acid is under less pressure than in the ordinary lemonade of trade, which contains generally when filled from a machine 2·5 atmospheres of gas. This liquor would not contain more than 1·5 atmospheres in addition to the quantity dissolved by the water. There is just sufficient to make it grateful, and not too much to prevent it from being easily taken as a draught. I should have preferred to have seen half a fluid ounce of simple syrup with half a drachm of tincture of fresh lemon peel, ordered for each half-pint bottle, rather than syrup of lemon, which has, to my palate, a mawkish taste.

Oleum Phosphoratum is made with almond oil, which is first directed to be heated to 300° Fahr., and maintained at that temperature for fifteen minutes. Now, in some cases such treatment of the oil may be necessary, but I have not noticed either water or albuminous matter in the almond oil with which I have experimented. Almond oil readily takes up the phosphorus when the required temperature of 180° (Fahr.) is maintained. The oil now officinal differs in strength from the phosphorated oil of the Codex, which contains 2 per cent. Presuming the specific gravity of almond oil to be ·920, then ·74 will be the percentage of phosphorus. Surely a one per cent. solution would have been preferable. I do not consider the description of "colourless" as correct for this liquid. I should describe it as straw-colored.

Pepsin.—At last this preparation is made officinal, and a standard published by which the value of medicinal pepsin can be determined.

How much of the pepsin of trade will come up to the officinal test, is a matter of speculation.

I have prepared pepsin from fresh rennets, but have not yet had an opportunity of experimenting upon pepsin, either from pigs' or sheeps' stomachs.

It is imperative that the directions of the pharmacopœia as to washing, be strictly adhered to; and I should say, profiting by a failure I had on the first occasion, the scraping even of the stomach is a matter of importance, for a material point seems to be the sufficiently light scraping in order that the fatty matter be not removed with the viscid pulp, which is finally converted into a solid form by desiccation at a temperature of 100° Fahr. The powdering of the

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gelatinous-looking pellicles is a matter easily to be accomplished, the result being "a light yellowish-brown powder, having a faint, but not disagreeable odor, and a slightly saline taste, without any indication of putresence."

The determination of its value by its solvent action upon fifty times its weight of coagulated egg albumen aided by a minute quantity of hydrochloric acid is, I believe, in the main, correct. That the albumen will dissolve there can be no question; the time mentioned, viz., four hours, seems to me for, at any rate, pepsin from the stomach of the calf to be rather too short. The experiment I made took a longer time; it is, however, just possible that pepsin made from a pig's stomach may have a more rapid action upon albumen.

Pilula Phosphori.—Phosphorus is not one of the most manageable bodies to convert into a form suitable for administration and easy dispensing. We must not, therefore, be surprised if some complaints are made upon the practicability of the method for preparing this mass. My experience in making phosphorus preparations has been limited. I will therefore merely say that, as far as I can judge, the directions accompanied with considerable care and patience give a very satisfactory result. To make the wax thoroughly incorporate with the balsam of tolu and phosphorus is the part of the process that seems most tedious. Upon a quantitative experiment I have made I find when operating upon about half a pound of the ingredients that the weight is finally increased about 13 per cent. on account of the water absorbed by the mass during the immersion and manipulation. This hydration, therefore, will give an amount of phosphorus present in the completed product equal to about 1 per cent.

Pilula Scammonii Composita is the non-aloetic cathartic mass promised to be inserted in the Appendix. It is to be supposed that the curd soap here ordered will replace the olive oil soap in most preparations in which the latter is now prescribed in all future editions of the Pharmacopœia. The use of spirit as a solvent, combined with strong tincture of ginger, leaves little to be desired as far as the production of an elegant mass is concerned; but the process is rather an expensive one, and the essence of ginger might have been replaced by the oleo-resin of ginger (or gingerine as it is called in trade), now officinal in the United States' Pharmacopœia, which would in this case have answered the purpose exceedingly well.

Pulvis Elaterii Compositus commends itself immediately as a safe and ready means of dispensing elaterium.

Pulvis Glycyrrhizæ Compositus is somewhat different to the compound liquorice powder we have been accustomed to see prescribed latterly, which was that of the Prussian Pharmacopœia, containing, in addition to the British Pharmacopœia ingredients,

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sulphur and fennel fruit; doubtless those in charge of the work have strong reasons for rejecting the sulphur.

Sapo Animalis.—The introduction of this soap into the Pharmacopœia is a wise step, even if only to authorize a practice common with manufacturers, who have been fully cognizant of the objections to the olive oil soap of the Pharmacopœia for some years. The remark, that "this soap may with advantage be substituted for the hard soap made with olive oil in preparing Linimentum Potassii Iodidi cum Sapone" is not in the least too strong, for it is absolutely necessary, if anything approaching a good liniment be required, that the officinal olive oil soap be discarded. How manifest is the disadvantage under which the compilers labour in having to publish an appendix only, without revision of the text of the old work; for a parallel can be found for this remark upon the soap over and over again in looking through the Pharmacopœia and comparing it with the work of certain pharmacists upon certain subjects to which they have given their attention since the 1867 edition was introduced, but which cannot appear because of material alteration that would be necessary in the text.

Succus Belladonnæ belongs to a class of preparations which have for years been in some demand; they are really valuable, and as a rule are much more to be relied upon than solid extracts. Of course a hard and fast rule cannot be laid down as to the relative equivalent value of this or other juices as compared with the original plant or with the extract, but the following, I think, will nearly express the average ratios:—

Belladonna Herb, fresh.....	100 parts.
Expressed juice	60 "
Solid Extract	4·7 "

Succus Hyoscyami, the same remarks apply as to the preceding juice, but, perhaps, here to a stronger degree upon the greater objection to evaporation, for I am of opinion that expressed juice of henbane suffers considerably in evaportion, for the production of the solid extract.

The relative equivalent values of herb, juice, and extract, will probably be as under—

Henbane Herb, fresh	100 parts.
Expressed Juice.....	70 "
Solid Extract	4·4 "

These expressed juices seem to have a specific gravity of about ·990 to ·997.

Suppositories.—My experience in the manufacture of suppositories is very small. Martindale, Gerrard, and other practical men can speak more authoritatively upon the subject than I can; doubtless they will give us the benefit of their observations in manipulating the three soap suppositories.

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The irritant nature of the soap upon surfaces with which it comes in contact, is purely a medical question, and does not concern us.

The *Carbolic Acid and Soap Suppository* does not work well, the quantity of moisture being alone derived from the carbolic acid seems to me insufficient, at any rate it will not admit of starch being used. To make these easily I should take equal parts of curd soap and curd soap in powder.

The *Suppository of Morphia and Soap* is easily manipulated, the quantity of starch added being sufficient to make the suppository finally weigh 16½ grains.

The *Suppository of Tannic Acid and Soap* is also easily made, the amount of starch added being sufficient to make the suppository weigh upwards of 23½ grains.

The two latter suppositories on exposure to damp air, might be expected to become slightly adhesive from the use of the hygroscopic body glycerine.

Syrupus Chloral.—The administration of hydrate of chloral in the form of a syrup has been general during the past two or three years. When it was first used in this form the variously flavored syrups were numerous, amongst them might be enumerated orange peel, orange flower, peppermint, tolu, ginger, chloroform water. It would have been well if at the evening meeting, some two or three years since, when it was proposed to settle the question of the best vehicle for its administration that the matter had been decided; the syrup would not then have been sent through the country broadcast made from half a dozen different formulæ, but a recipe would have appeared in the Journal as having had the approval of the meeting, and would consequently have carried some weight with it. It would seem that this difficulty beset the Pharmacopœia Committee, for they have finally settled upon simple syrup, hoping by its adoption to prevent all chance of giving offence to one or other who have held that such and such a flavoring was the most elegant.

All this is very good, and under the circumstances is, perhaps, the best solution of the difficulty that could have been devised, and I admire it. I cannot say as much for the elegance of the syrup itself, for to a pharmacist's eye, it is anything but a syrup.

The formula given contains too much water for the solution of the hydrate before the simple syrup is added, the resulting compound being thin and certainly unparalleled in density by any other officinal syrup. When prepared according to the Pharmacopœia formula the spec. grav. will be 1·218. I should certainly suggest that when an opportunity occurs for a revision, we should be directed to dissolve the hydrate in about its own weight of water and then add simple syrup, thus—

Hydrate of Chloral	80 grains.
Water	1½ drachms.
Syrup to	1 fluid ounce.

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The spec. grav. of such a syrup would be 1·320 and would be an improvement, at any rate pharmaceutically, upon the now officinal syrup. It may be that there are some who are so fastidious that they object to the taste of sugar—if that be the case let a solution in water only be made officinal—of an equivalent strength to 10 grains to the drachm.

Tinctura Aurantii Recentis is an old friend, for grey-haired pharmacists will remember that a tincture from the fresh peel, although not of equivalent strength to the present, was officinal in the 1824 pharmacopœia, and was discarded for reasons best known to the compilers of the 1836 edition. We are certain they did not then cherish the now popular notion of conservatism, or they would have retained the formula for the present race of pharmacists, who, perhaps, wish they had done so, rather than they themselves should be accused of retrograde pharmacy. The subject was revived before this Society at an evening meeting, by Haselden, as one worthy of attention. (PHARM. JOURNAL, Nov. 9th, 1872.) The discussion upon this paper, in which Bland, Brown, Greenish, Groves, Sandford and Umney took part (PHARM. JOURNAL, Nov. 9th, 1872) went to show as follows:—

Bland.—"*That tincture of dried peel was a bitter, while tincture of fresh was a flavor only.*"

Brown.—"*That upon no account would he use rectified spirit.*"

Greenish.—"*That Continental pharmacists used dried peel and double strength.*"

Groves.—"*That he had experimented upon all peels, and finally came back to the recently dried by preference.*"

Sandford.—"*That he had used a tincture approximating to the 1824 tincture.*"

Umney.—"*The difficulty there would be at certain times in procuring fresh Seville orange peel.*"

The result of this discussion apparently would not have been the introduction of this tincture if these pharmacists had a voice in the matter. Symes (PHARM. JOURNAL, Nov. 9th, 1872, p. 381) also remarks upon this tincture, and suggests the addition of as much water as with the water in the peel, would bring the spirit to proof strength, but none of these experimenters seem to have fallen into the error the British Pharmacopœia has in the manipulation there directed.

We are told to macerate the 6 ozs. of orange peel in one pint of rectified spirit for a week with frequent agitation. Then press the dregs, mix the products, and make up the measure to one pint with rectified spirit.

The introduction of the word "pint" into the text is evidently an error, and seems to have crept in inadvertantly, for we are directed only a few lines previously to take a "sufficiency" of spirit, which remark would have been unnecessary, or at any rate contrary

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to custom, if a pint had been intended. I have had an opportunity of making this tincture during the past fortnight, and have found rather than spirit being required to make up any deficiency resulting from loss, there is actually a gain of about 10 per cent. by volume. The formula should, therefore, be amended thus:—

Take of—

Bitter Orange. A sufficiency.
Rectified Spirit. 18 fluid ounces, or a sufficiency.

Carefully cut from the orange the colored part of the rind in thin slices, and macerate six ounces of this in 18 fluid ounces, etc., etc. Finally, add sufficient spirit to make one pint.

I would remark that my observations confirm those of Haselden and Symes, that fresh peel is to dry peel as 100: 33:3.

Tinctura Laricis has previously been but little used; when it has, the tincture has generally been made with proof spirit. With the bark in a proper state of division, percolation is admirably adapted for the production of this tincture. The loss of spirit I have noted in making it by the officinal method is about 10 per cent. by volume.

Tinct. Quiniæ Ammoniata has been seldom heard of previously. The formula given is one that has appeared in the PHARM. JOURNAL, and has doubtless been adopted by those who have had occasion to prepare the solution. The specific gravity noted is ·936. One fluid ounce of this tincture, when evaporated to dryness over a water bath, re-dissolved in one fluid ounce of water, and ammonia cautiously added in slight excess, will give a precipitate, which, when dried until it ceases to lose weight, will weigh not less than 5·6 grains.

Two preparations are conspicuous by their absence. I refer to the acetum and oxymel of ipecacuanha. These were introduced to us by Dr. Duckworth, and working processes given by Carteighe, and over and over again they were said to be destined for the addendum.

What has become of them? Is it possible that they kept perfectly up to a certain time, and then suddenly went the way of all ipecacuanha preparations. I imagine that this must have been the case, for we heard of them at every meeting at which the additions to the Pharmacopœia came under discussion, and finally they are shut out.

I would submit that if these have been found unstable, an aceto-alcoholic fluid extract be prepared and investigated, with a view to its use in future editions, either as a fluid extract, or more generally for a syrup, by dilution of the fluid extract with simple syrup.

In conclusion, I would now review the first page, entitled, "Corrections made in 1874 in the Reprint of the British Pharmacopœia of 1867."

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The only important correction is the specific gravity of the strong solution of perchloride of iron, which was formerly stated to be 1·338, now to be 1·440, which is, I believe, nearly accurate.

The tincture made by diluting this liquor with rectified spirit, and for which a specific gravity was named in the previous print, has been deemed either accurate or unworthy of correction.

The list in the main consists of the proportions of active ingredients in various more or less potent preparations. Up to the present time I have not had an opportunity of checking these calculations.

I would, however, point out one anomaly in which ipecacuanha and opium, both of which are in the ratio of one in ten in Dover's powder, are said to be respectively as one in twenty-four and one in twenty-three and a half, nearly, in compound pill of ipecacuanha and squill.

While I sympathize with the compilers in the difficult task they have had in making corrections without disturbing the text of the old print, to which point I have previously alluded, still, I cannot refrain from expressing my humble opinion that as corrections, almost the whole of which are immaterial, have been made, while more important points have been allowed to remain unassailed, it would have been better had that list never been published.

When the novelty of this book has passed away, we shall look forward to a new edition of our National Pharmacopœia, which will doubtless bear a decennial revision. In the meantime, let it be not only the ambition but the bounden duty of every pharmacist to make some research, no matter in what direction, if it bears upon pharmacy, and give this Society the benefit of his observations; by this, and by this only, shall we be enabled to keep pace with pharmacists on the Continent and in the United States, and what is of more importance, show to the medical profession that we are fully alive to the responsibilities of our calling.

Laboratory, 40 Aldersgate Street, E.C.

FISH OILS USED AS MEDICINE.

The *Chemist and Druggist* contains a paper, by Mr. P. L. Simmonds, on the fish oils of commerce, from which the following extract relating to those oils which are used in medicine is made:—

In Russia, among the accessory products obtained from various species of fish, oil is one of the principal, amounting in value to about half a million of roubles. This oil has three different uses—for medicine, for food, and for industrial purposes. Its source or origin is also threefold, according to the part of the fish

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in which it is chiefly concentrated. In some species, as, for example, in the cod, it is obtained exclusively from the liver; in others, as in the "sandre," the fat surrounds the intestines, the rest of the body in these fish never being fat; but in the larger number of species, as the herring, the salmon, and the siluroids, it penetrates all the frame. According to these differences in the distribution of the fat in the body of the fish, as well as the use to which the oil is to be applied, the mode of extraction varies. The cod-liver oil for medicinal use is extracted from the livers cut into pieces while they are still fresh, and submitted to the action of heat in a steam bath. This method has only been introduced of late years on the coast of Lapland, on the initiation of the Minister of Works of Russia, who offered rewards to those who followed the better method pursued in Norway, to which publicity was given. The invitation was readily responded to, and from one fisherman alone the Government buys 15,000 lbs. to 20,000 lbs. of cod-liver oil for use in the hospital. The fish oil which is intended for food is obtained principally from the fat which surrounds the intestines of different species of sturgeon and the "sandre;" these are heaped together, washed, and melted by heat. This oil is added to caviare, which of itself is not considered sufficiently rich in fat, and is also used at the seat of production, in place of vegetable oil, by the workmen on fast days.

Very good medicinal cod-liver oil is now made at St. Pierre, Newfoundland, by the French, and it forms a considerable article of commerce, its production having been encouraged by the French Academy of Medicine, who state the brown, pale, and bleached oils made there will compete favourably with the products of the Norwegian and English factories. That made in April, Mav, and June is the best, the livers being then leaner; later, when they are fat, the oil is not considered so good in a therapeutic point of view.

I have noticed the following mode suggested of making cod-liver oil palatable:—Take equal parts of ground coffee and bone-black, as used by sugar refiners, mix them in ten times their combined weight of cod-liver oil, and digest for half an hour at a temperature of about 130° Fahr.; then place the mass on a filter and drain the oil off, and you will have its nauseous taste changed into a pleasant coffee flavour. If the notion is correct that coffee is an antidote of iodine, and as the latter is one of the active ingredients of cod-liver oil, it may be well to let the patient use some iodine preparation at the same time, or to add a little iodine syrup to the deodorised cod-liver oil.

In Norway, the cod fish at the early part of the season are rich in liver, so that from 250 to 300 of the net-caught fish yield a barrel of liver, while 50 to 100 more fish taken on lines would be required. As the season advances the fish may become perceptibly poorer,

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from 400 to 450 being required to fill a barrel, while on the sea-board or western side of the Lofoden Islands from 600 to 700 livers are requisite. On the whole, therefore, it may be assumed that an average number of 450 livers are required to the barrel.

The total produce of cod-liver oil from the Norwegian fisheries in 1869 was estimated at 19,000 barrels—200 barrels were prepared as medicinal cod-liver oil. Fresh livers for medicinal oil fetched from 27s. to 31s. per barrel, old livers from 22s. to 26s. The catch of each boat varies from eight to twenty barrels of liver.

From the coast of Norway the average export of fish oil from 1851 to 1855 was 52,900 tuns, and from 1856 to 1860, 59,617 tuns per annum.

The produce of the French cod-fishery imported in 1860—which was a fair average of the five years previous—was as follows: Cod oil, 2,050,846 kilogrammes; cod oil, not purified, 284,649 kilogrammes From St. Pierre and Miquelon about 500,000 kilogrammes of cod oil are shipped annually.

In the United States a large quantity of fish oil is made from the menhaden (*Alosa menhaden*). Long Island, Connecticut and Rhode Island produced in 1870 about 1,400,000 gallons, and the business in the State of Maine is also large. Six factories in Long Island use up every week about 2,000,000 fish. The manufactories are nearly all worked on different plans. Some use large tanks, in which the fish are placed, and into which steam is forced. A portion of the oil is extracted, and coming on the surface of the water, is skimmed off; the water is then drained away, and the refuse is pressed by hydraulic presses or powerful levers. In another mode of working used by one manufactory, the fish are placed in a large iron cylinder, similar to a boiler, and steam is let in at a given pressure, while the cylinder is made to rotate by a steam-engine. The fish are steamed from twelve to fifteen minutes, then turned out, and subjected to hydraulic pressure, which, of course, extracts oil and water together. This runs through pipes into tanks, where the oil rises to the surface, and is taken off A thousand fish yield on average about thirteen or fourteen gallons of oil, though this depends largely on the season, and the good or bad condition of the fish. The uses to which this oil is put are very numerous It is good for table purposes, and, when properly prepared, the best kind is extensively used under the name of "olive" oil. It is a good paint oil: (?) much of the linseed oil sold in America has a large amount of menhaden oil mixed with it. It cannot, however, be used for lubrication, owing to the rapidity with which it absorbs oxygen and "gums."

From the ool-a-chan, or houlican, a small transparent fish like a smelt, the Indians of Vancouver obtain an excellent oil, which is used for the same purposes as cod-liver oil, and with as much, if not greater, benefit. The oil when cold is of the consistence of

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thick cream, white in colour, but with little odour, and by no means unpleasant to the taste; in fact, those who use it very quickly acquire a partiality for it. The Indians make large quantities every season, and with them it supplies the place of butter. They cannot live without it, and it forms a great article of trade. They prefer it rancid. It is a notorious fact that the Indians are subject to spitting of blood and consumption, but still live to a great age. How much has the oolachan oil to do with the prolongation of their days?

The houlican is somewhat larger than the sprat, and is so full of oil that it is said that those caught in the north will burn like a candle. The oil is obtained by merely immersing the fish in a small quantity of water and applying heat. The oil is then skimmed off, and when properly filtered is a very pellucid oil of a delicate pale yellow colour.

Among the fish oils, and other oils, locally obtained or met with in the East, are, at

Madras. Karahmanoo oil, from *Polynemus plebeius* and *P. uronemus;* skate oil, serinei oil (shark liver).

Bohet fish liver oil, oil from the loggerhead turtle (*Caouna dioacea*, Esch.).

Patna. Porpoise oil.

Calcutta. Fish maw oil; Joree and Seephoo oil.

In the Archipelago. Muria ekam fish oil.

On the Western and Malabar coasts an oil is prepared which is supplied to the hospitals for the use of the troops: this, in many cases, is obtained from the liver of the skate or ray, saw fish, cat fish, seer and white shark indiscriminately. From analysis and experiments, it has been found to equal in its medicinal properties the best cod-liver oil, but from its disagreeable taste and odour it could never supersede that oil. At Kurrachee, large quantities of fish liver are prepared, but it is not so well made as at Malabar and Calicut.

NEW THERAPEUTIC REMEDIES.

(Continued from page 364.*)*

III.—*Alcoholic Compounds.—Nitrate of Amyl.*—This liquid is the second example only of an organic nitrite being utilized in medicine, the other being nitrite of ethyl—the essential constituent of the old and well-known "sweet spirit of nitre." *Nitrate* of ethyl or *nitric* ether proper, is a heavier liquid than nitrate of ethyl, and does not appear well adapted for practice, on account of its irritating tendency.

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This amylic nitrous ether was discovered by Balard in 1844, more fully investigated by Guthrie in 1859, and again more thoroughly still by B. W. Richardson in 1863–64. We cannot doubt that we have here an agent of at least very remarkable and energetic powers, while it is noticeable that the morbid conditions in which the drug has been found serviceable were pointed out before it was used in practice. As a powerful and rapid modifier of the action of the heart, and as an extraordinarily active means of relaxing arterial tension, it stands alone; and with too scanty experience to pronounce positively on its precise powers for good or evil, we cannot mistake the prompt and effectual relief which it has in several cases given to the agony of angina pectoris and the paroxysms of spasmodic asthma. No doubt some serious consequence, such as troublesome headache and alarming prostration, have occurred after its use, but we should remember that much of the amyl nitrite, as sold, is very impure, and, in addition to not inconsiderable quantities of prussic acid, if liable to contain other organic compounds, *e.g.*, aldehyd and ethyl-amylic ether, which must interfere with its proper action. Unlike nitrite of ethyl, it does not appear to suffer decomposition by keeping.

Bromal, Chloral, Croton-Chloral.—Of these three bodies I may say, in brief, that ordinary or ethylic-chloral has secured for itself a firm position in medical practice; bromal offers little promise of utility; and croton-chloral is just entering upon its trial. They are all strictly analogous bodies, and are respectively the bromine or chlorine derivatives of aldehyds. Bromal is brominated ethylic (common) aldehyds; chloral is chlorinated aldehyd: and croton-chloral is a chlorinated derivative of crotonic aldehyd, *i.e.*, of the aldehyd of crotonic acid, a constituent of croton oil.

Bromal is prepared in a manner similar to that used for chloral, viz., by the action of bromine on alcohol. It is a colorless, oily liquid, sp. gr. 3·34, boiling above 212°, and, like chloral, forming with water a solid definite hydrate. It was discovered by Lowig in 1832. The hydrate=$C_2HBr_3O,2H_2O$ (Watts). When administered to the lower animals (frogs, rabbits, and guinea-pigs) in doses of from 2 to 15 grains, the principal symptoms produced are irritation of the air passages, restlessness, followed by imperfect sleep, and anæsthesia, and finally dyspnœa and death, either with or without convulsions. It has been given to man in a few cases of disease —viz., epilepsy, tabes dorsalis, and aortic valve disease, in doses of ½ to 1½ grains and upwards. It is soluble in six parts of water. It it evidently possessed of considerable activity, for 1 grain has, in the human subject, produced unpleasant results, and 4 grains have caused great depression and severe pains in the stomach. It seems unlikely to prove useful either as a hypnotic or as an anæsthetic. It is too irritant, and does not appear to offer any advantages as a

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therapeutic means over other safer and speedier remedies. It is stated to be barely supportable in an emulsion containing 1 in 300.

Chloral.—Of this now so familiar drug I would only say that it, as well as bromal, supplies us with a fresh warning to take heed not to push chemical analogies too far when dealing with the phenomena of life, and we shall only be led astray by regarding the stomach as a warm test-tube, in which the chemist can work out his problems as unerringly as in the laboratory. Because chloral is decomposed by strong alkalies, or their carbonates, in accordance with a well-known reaction, into chloroform and formiate of the base, the specious theory was promulgated that the action of chloral was thus simply explained, and that it, in fact, was nothing else than the action of nascent chloroform gradually evolved within the system.

Although this theory has met with and still finds general favor, it has, in my opinion, no valid support, and cogent chemical and physiological arguments can be arrayed against it. I think it should be held that chloral exercises a specific action of its own upon the organism, which is not to be reasoned out from an exclusively chemical basis.

It is interesting to recall that the discovery of chloral preceded that of chloroform, for it was in 1832, while studying chloral, which he had just discovered, that Liebig for the first time met with chloroform.

Other varieties of chloral, *e.g.*, amylic and propionic, are known to chemists, and probably an indefinite number of chlorals could be obtained by suitable means. Liebreich, the introducer of ordinary chloral, has suggested a new chloral, which is possessed of some remarkable properties. To distinguish it from its predecessor, it is termed *croton*-chloral, *i.e.*, the chloral of the crotonic series. Dr. Hoffman found that some of the German chloral contained more or less of crotonic chloral, and its origin is accounted for in this way:

The alcohol from which ordinary chloral is made in Berlin, by the action of dry chlorine on absolute alcohol, is purified by passing it over charcoal. Hence, by oxidation, some ethylic aldehyd is formed. This, when acted upon by the hydrochloric acid liberated in the reaction, suffers dehydration, and yields crotonic aldehyd—$2C_2H_4O—H_2O=C_4H_6O$; and this new aldehyd, acted upon by the chlorine gas, furnishes the new chloral, $C_4H_3Cl_3O$.

Most agents which act upon the nervous system affect it generally, or at least engage in their sphere of action several important tracts. At the same time we possess some active drugs which exhibit a remarkable determination to particular areas, *e.g.*, conium, curare, &c., and in this new compound, croton-chloral, we meet with a body which exerts a specialised and singular action upon a very limited nervous region.

When administered to animals it produces, first, anæsthesia of the head, then loss of reflex movements throughout the body, and

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finally death by paralysis of the medulla oblongata. In man, however, when given in small doses, it produces anæsthesia of the fifth nerve, and of that alone, while the sensibility of the body generally and the pulse and respiration remain unaffected. This singling out of an individual nerve will, if confirmed, stand alone, and is a curious and suggestive phenomenon.

Hydrate of croton-chloral closely resembles in appearance the ordinary chloral. It may be prepared by passing chlorine gas into allyene, or by acting upon dichlorallyl and formic acid with alkalies.

Propylamine (so called).—This, the last subject upon which I will offer any remarks, has given rise to some discussion and to much confusion in the medical journals, but it may be disposed of in a few words. The principal points which I would urge are the importance of precise nomenclature, especially in organic chemistry, and the necessity of discriminating clearly between isomeric compounds, or, in other words, not to mistake identity of *composition* for similarity of *constitution*. So far back as 1817 it was announced that the fœtid odour of *Chenopodium vulvaria*, a British plant, commonly known as stinking goose-foot, was due to the presence of a volatile ammoniacal compound ready formed—the first example of a free alkali in the vegetable kingdom. More than thirty years subsequently (1851) it was shown that the same volatile base existed in many other plants, and in various animals (May bug), its most abundant source being herring brine; and it was at first identified with the chemical compound propylamine, *i.e*, propyl-ammonia. For years this was generally accepted, and the drug was introduced into medicine under that name by Dr. Awenarius, of St. Petersburg, in the treatment of rheumatism more especially. Even in the last edition (1865) of Guibert's excellent "History of New Remedies," this substance is treated of under the erroneous title of propylamine. But it has been known for some years (1862) that true propylamine has a different origin, and exhibits widely different properties, and it has been proved that the so-called propylamine of commerce, obtained from cod-liver oil, herring brine, ergot, &c., is in reality trimethylamine, with which it is isomeric.

The ultimate composition of these bodies is $C_3 H_9 N$, but, of course, this formula in itself teaches us little, and we now know that there are at least three different bodies which own this empirical formula, and yet are totally distinct from each other. These bodies are:—

$$\left.\begin{matrix} C_3 H_7 \\ H \\ H \end{matrix}\right\} N$$—A primary amine=true propylamine.*

* There is also iso-propylamine known,

$$\left.\begin{matrix} CH\,(CH_3)_2 \\ H_2 \end{matrix}\right\} N,$$

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$$\left.\begin{matrix} CH_3' \\ C_2H_5' \\ H \end{matrix}\right\} N$$—A secondary amine=methyl-ethyl-amine, and

$$\left.\begin{matrix} CH_3' \\ CH_3' \\ CH_3' \end{matrix}\right\} N$$—A tertiary amine=trimethlylamine.

We should remember, then, that as yet there is no such thing as real propylamine used in medicine, and what is styled so is undoubtedly trimethylamine.

The boiling point alone will distinguish trimethylamine from propylamine, for the former boils at 40° F., and the latter at 121°. The dose of trimethylamine is 20 m. and upwards. It may be said, what is the use of this dissection of formulæ, this contention about names—let chemists fight their own battles. To this I would answer, not only is the confusion of names mischievious, but the properties of these bodies are different one from another, and plainly all accurate knowledge is at an end unless names be used in their true signification. It is only because of their comparative novelty, and of the partial resemblance between propylamine and trimethylamine, that these two liquids have been confounded. Morphia and piperia are isomeric—their empirical formulæ are identical—yet no one dreams of confusing these two bases, for they are too widely apart in their origin and properties. In reference to the class of bodies to which trimethylamine belongs, viz., the amines (*i.e.*, organic ammonias), it may be observed that, as all the natural alkaloids are probably either secondary or tertiary amines, it is only rational that we should look for active agents among such as can be artificially prepared.

If we now take a glance over the history of *organic* chemistry, *i.e.*, the chemistry of the hydrocarbons and their derivatives, from its birth, half a century back, we shall see that the principal services rendered by chemistry to therapeutics distribute themselves through several epochs. First, chemical analysis came to our aid, and revealed the existence of distinct active principles in drugs, and explained their composition. To this study we owe the whole group of alkaloids, and the knowledge of such facts, for example, that the properties of cherry laurel water, or of emulsion of bitter almonds, are entirely due to the production of prussic acid. The poisonous qualities of bitter almonds had been indicated from antiquity, and those of cherry laurel from the beginning of the eighteenth century.

Then, advancing beyond the mere separation of immediate principles, chemists submitted animal and vegetable matters to the action of the most varied and powerful re-agents, and thus, through the study of chemical metamorphoses, whole groups of new compounds were opened up, and novel, simple, and less costly processes for the preparation of bodies previously known were disclosed. In proof of this may be cited the present commercial manufacture of

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benzoic acid from hippuric acid, and of glycerine by the aqueous saponification of fats.

In pursuing these intricate studies chemists were naturally led, not only to the consideration of known substances in varied aspects, but also to the discovery of entirely new compounds.

How pregnant with value this line of research has been to medicine will be manifest when I mention among its offspring creosote, carbolic acid, collodion, chloroform, chloral, apomorphia, &c.; while in the arts we have from coal, benzine, aniline, with its splendid colour-derivatives, and anthracene, from which the colouring principle of madder is artificially obtained. In the more recent times still, physiologists and therapeutists, not content with passively accepting information from scientific chemists, assume, in their turn, the position of teachers, and by the happy combination of their joint labours we may justly look forward to the array of discoveries, of which nitrite of amyl, chloral, and chloroform are the heralds.

In conclusion, I wish to say that my object in demonstrating these various drugs this evening was mainly on account of their possible novelty to some of the members, and to give them an opportunity of examining them at leisure. Some of the remedies were referred to chiefly from a chemical point of view, but I would not be understood as desirous of claiming too arrogant a position for chemistry in its relation to therapeutics, nor can therapeutics ever be built upon any one science, or be successfully studied without the co-operation of clinical observation.

But while I do not believe in the visions of those who see in the chemistry, and in the chemistry alone, of the future, a complete and harmonious system of therapeutics, the close and legitimate aliance which subsists between scientific chemistry and practical therapeutics cannot be too strongly upheld.

SUGGESTIONS TO BEGINNERS IN PHARMACY.

BY PROFESSOR WILLIAM PROCTOR, JR.

(Continued from page 385.)

In an establishment where the preparations of the Pharmacopœia are made for its own dispensary, the beginner has a great advantage, as from the first he can witness processes more or less interesting, and which arrest his attention. Though at first only as an aid, or perhaps coming in at the close to cleanse the apparatus, he soon learns enough to be useful, and then if he is willing and obliging, he has the *open sesame* of rapid advancement. In this way a three months' apprentice, has taken charge of the weekly

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supply of citrate of magnesia in a careful and reliable manner, and has felt encouraged and sustained by his consciousness of being useful, and of advancing in knowledge. When he becomes conscious of a desire to enter the field of book knowledge, and make it assist his observing faculties, and explain his difficulties, a great point has been gained in his onward progress. Let us suppose his first trouble in washing mortars to arise from Prussian blue, which resisting his best efforts he applies for help, and is told to use solution of potassa, the magical effect of which makes a deep impression on his mind. When evening comes he sets to work with the Dispensatory, at the article Prussian blue, and soon gets at sea in chemistry, which he cannot understand, but he succeeds in learning that potash forms a soluble salt with Prussian blue, and thus detaches it from the porcelain surface, setting oxide of iron free. At the same time he glances at "*Potash*," learns its origin from wood-ashes lye, that it is a *base*, neutralizes *acids*, forms *salts*, dissolves *fats* and forms *soap*, and many other facts.

Now it is not to be expected that our young friend has gotten a very clear insight into the chemistry of these subjects, but if intelligent he has seized the leading points, and will not rest until all is understood by subsequent study. The habit of close observation of color, taste, odor, shape of outline, and configuration of parts, should be cultivated as one of the most valuable aids in gaining knowledge, as he progresses from day to day, and by cultivating a habit of using the pencil to imitate the form and construction of objects, whether drugs or apparatus, it will be found to aid the memory decidedly.

We will suppose our lad is set at grinding senna in a Swift's mill, for fluid extract. It is light work but tedious, and in the frequent resting-spells his curiosity is attracted to the drug. He finds several distinctly shaped leaves, notices that at the base they are mostly *uneven*, but some are not, that when chewed the drug colors the saliva quickly, and that it has a peculiar odor. If he is critical he may find leaf-stalks, seed-vessels, &c., and by the time he has ground ten pounds he is pretty well acquainted with the sensible characteristics of senna. When evening arrives he resorts to his Dispensatory and finds that there are several kinds of senna, and it takes him some time to decide that the mixed character of what he had been grinding fixed it as the Alexandrian, or Upper Nile senna. He notes the kind of plant, gets a hint of its commercial history, what it contains, what liquids are best to extract its virtues, what medical properties it has, and what preparations are made from it. He then re-examines the leaves in view of his reading, looks at his school atlas for Nubia and Abyssinia as the country of its growth, and the next time he is sent to a large drug store asks to see a *bale* of senna, and he is pretty well booked up on senna, and will not forget it; all this will take several evenings. Senna is but one of a long list of

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vegetable drugs that in his first year's experience will practically come to his acquaintance, and by following the same course, an outline of whose history will be grasped, and gathered into his store-house of memory for future use.

At the very beginning of the Pharmacopœia is a notice of the weights and measures used in pharmacy, and at the end of the Dispensatory a much longer notice describing the French and other weight and measures. Now as pharmacy is a business constantly requiring exact quantities by weight and measure, the beginner should from the first familiarize his mind with the officinal weights and measures, and the manner of using the scales or balance, and the measures of capacity, as well as the relations of troy weight to avoirdupois or English weight, and metrical or French weight. He should also try his hand at dividing a given quantity, say a drachm, into ten parts with a spatula, by the eye, and then weigh each one, and see how it varies from six grains, the proper weight of a tenth. For the same reason that he exercises his memory to grasp knowledge, he should exercise his senses and muscles to acquire skill, constantly keeping in mind the old adage "that whatever is worth doing should be done well." In the simple matter of wrapping packages in paper there is a wide field for skill. Some never learn how to do it neatly, especially doses of powders. Others give so neat and regular a finish to their work as to make it attract attention. The wrapping of bottles and boxes in paper, and especially the tying of bundles, all are worthy of close attention until habitual skill is attained.

In the matter of cutting, and attaching labels to bottles and boxes, the same range of skill exists, and to be always neat requires care in gaining the habit at first.

In the manner of handling the pestle in trituration, in contusion, pill-making, or in emulsionizing, or of managing the spatula in mixing ointments or powders, there is a wide margin for grades of skill and neatness.

Cleanliness in pharmacy is a virtue that ranks with *order*, and without these the shop practice becomes more or less demoralized. Clean glassware, bottle, graduated measures, white mortars, bright spatulas, and a clean, orderly counter, add wonderfully to the pleasure of dispensing, as they do favorably impress the patrons of a store. The habit of restoring bottles to their proper places after using them, that of keeping all receptacles suitably filled ready for use, and that of labelling every vessel or package that is set aside, are among the most useful that contribute to shop order and comfort. The amount of trouble and annoyance saved by habitual attention to these shop morals, by *all* employes, can only be appreciated by those who have seen the working of both plans, and drawn their conclusions.

It is to ingraft and fix these and other important habits, that

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our colleges require four years' apprenticeship or training at the dispensing counter and in the laboratory, before granting their diploma; a requirement which should be most strictly carried out.

But a new experience awaits our novice; he is to take part in a chemical operation attended with some care and labor,—the making of Vallet's pill-mass of carbonate of iron. After weighing certain quantities of sulphate of iron and carbonate of soda, he separately dissolves them in boiling water containing a portion of syrup, strains the solutions to remove undissolved particles, and mixes them, when cold, in a vessel just capable of holding them, when, to his surprise, a thick, pulpy, bluish-white mixture results, which separates into a solid precipitate and a clear liquid above. The liquid is drawn off, and its place filled with pure boiled water containing syrup, and the whole intimately mixed, allowed to settle, and the process repeated, and the sediment finally drained on a cloth filter, tied, expressed, mixed with sugar and honey, and on a water-bath evaporated with constant stirring, until when cool it has a solid pillular consistence. The points in this process to attract his attention are: the reason that mixing the clear solutions produces a sediment, why boiled water is used, why the washing water is sweetened, why honey is used, and, finally, why a water-bath is employed. After the tedious process of stirring is concluded, and the pill-mass stowed away yet warm in jars, the Dispensatory will answer all these queries clearly and satisfactorily, if appealed to, and he will have added a chemical chapter to his experience, involving the law of double decomposition, and the power of sugar to prevent or retard atmospheric oxidation, and the process of decantation and filtration.

This is only one of many chemical processes that he will be called on to take part in, long before he will be able to attend lectures at college; or, if this is beyond his reach, before he can make progress in the study of chemistry sufficiently to understand chemical reactions. It is this excited curiosity, this desire to understand phenomena daily occurring, that is to stimulate his efforts at self-improvement in knowledge, and finally give him the victory over adverse circumstances. Some of the greatest minds devoted to chemistry in the past have thus begun their career. Scheele, the discoverer of so many organic bodies, Davy and Liebig, so justly celebrated as chemists and investigators, were all at one time apothecary boys, groping in the dark bravely, until they found light for themselves and all others. But our beginner is getting sufficiently advanced to be called a student, he is in his second year, and looking forward to attending lectures next winter, when he will enter systematically on the science of his business, and clear up hundreds of little theoretical difficulties that have bothered him in his progress. He begins to see that botany is necessay to understand materia medica, and that the laws of physics or natural philosophy

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have much to do with explaining the phenomena of steam apparatus, of solutions, of crystallizations, and of taking specific gravities; and he rightly desires the aid of hand-books. For the former, Dr. Gray's little work, "How Plants Grow," will serve his purpose; or "Lindley's Outlines of Structural Botany;" and for physics, some work like "Ganot's Popular Physics," will do for awhile; but Mueller's will be more satisfactory for advanced students. Special works on manipulation, chemical and pharmaceutical, are of great value. The great book of Faraday on Chemical Manipulation, so simple in its language, but so full in its meaning, has long been out of print; but "Campbell-Morfit's Chemical and Pharmaceutical Manipulations," is a good substitute and well illustrated. Bowman's Chemistry for the Beginner in analysis, is good; but for the more advanced student, Dr. Attfield's Chemistry, written with a view to the needs of the student of pharmacy is excellent. In fact, the literary aids to the student are so numerous that he is often confused in choosing a guide, and it is of the utmost importance that he should keep his mind clear to his main object, the building up layer on layer, regularly and solidly, the superstructure of his own professional knowledge, on the solid foundations he has laid by his first and second year's devotion to the rudimentary services in the laboratory and at the counter. If successful, his reasoning powers will have been exercised freely, his judgment matured, his memory well stored with facts, derived from study or from observation and experience, and he will be well fitted to receive the honors of graduation, and to go out into the world as a disciple of Esculapius in the service of his fellow-men.

NOTE ON POWDERING CAMPHOR.*

BY GEORGE F. EBERT.

The methods and suggestions for powdering camphor, and retaining this refractory body in its powdered state, have not alone been numerous but curious. Among the processes offered I will cite that of resubliming by aid of heat. This was suggested in a paper read at the 19th annual meeting of the A. P. A. at St. Louis, 1871. Had the author of this paper given the volatility of camphor its due consideration he never would have claimed any advantage in obtaining the camphor in a very *dry* powdered state, as this certainly is the most favorable condition for its recrystalization.

Somewhat later the subject fell under the scrutiny of the "Pharmacal Writer of the Period," who after a critical review of the dif-

* Prom the Pharmacist

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frent suggestions of his confreres, "capped the climax" by suggesting the sticky agency of that nasty and horrid of all substances, *castor oil*. Having still a faint recollection of our *castor-oiling* in infancy, when the "tempter," having failed to corrupt our infantile integrity with bribes of sugar-plums, etc., our hands were firmly held, the nose ruthlessly seized and pinched, and without further hesitation the sticky oil was poured down our throat. Although this forcible coercion had left a deep-rooted grudge against castor oil, we gave the suggested process a fair trial, and proved it, like many other processes suggested by this prolific writer, very nice in theory, but very poor in practice, the camphor acquiring an oily, rancid odor, and not accomplishing the desired object in retaining it in the powdered state. The problem being still unsolved, I gave the subject further thought and experimentation, and after many trials with numerous agents, I find the much used and much abused *Glycerin* the simplest and most efficient substance to keep camphor in a fine divided state. The following is the maximum quantity of glycerin which I have found necessary to overcome the adhesiveness of the particles of camphor for each other.

Take of Camphor	6 ounces.
Alcohol	5 fluidrachms.
Glycerin	1 fluidrachm.

Mix the glycerin with the alcohol and triturate it with the camphor until reduced to a fine powder.

Preparation of Tar Water.—The Phila. *Medical and Surgical Reporter* abstracts from a French journal the following method for the preparation of tar water:—Mix 300 parts of Norwegian tar, 250 of bicarbonate of soda, and 500 of rain water. Allow the mixture to react in the cold for two hours, then gently boil it for a quarter of an hour, stirring continually. Remove from the fire, and add of boiling rain water 9,500 parts. Agitate briskly for a few minutes, then let the mixture cool. After cooling, let it be well shaken on several occasions. Finally, let it clear itself, by deposition, of any undissolved tar. The first boiling produces a sort of tar-soap, in the form of a soft, clear-yellow, and homogeneous mass. To a great extent this soap becomes perfectly dissolved in the water, and imparts to it a brown color. It is important that the boiling should not be long continued, lest it should decompose the tar, and it is further desirable that the mixture should be allowed three or four days, or even longer, to clear itself, as it thereby acquires more aromatic properties.

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Editorial.

THE ADULTERATION ACT.

At the close of last session of the Dominion Legislature, an "Act to impose license duties on Compounders of Spirits; to amend the Act respecting Inland Revenue; and to prevent the Adulteration of Food, Drinks and Drugs," was passed, and on the 1st of January of next year will be carried into effect. This measure bears abundant evidence of the haste which characterized its passage through Parliament, but still contains many good features, which, when perfected into a practicable and smoothly-working shape, will have a generally beneficial influence on the community.

It is no part of our duty to discuss the expediency of increasing the revenue by imposing upon compounders of spirits a license fee amounting to fifty dollars per annum; suffice it to say that such license is required, and that it was only at the final reading of the Bill that this decision was arrived at; the original intention being that of imposing a heavy excise duty on articles manufactured, as well as requiring the payment of the above fee. The former portion of the clause was very properly withdrawn, for it would have been manifestly unjust to exact fresh duties on spirits which had already contributed their full share to the revenue, and which, in many cases, would merely have changed their form by being diluted with water.

The first thirteen sections of the Act relate exclusively to "compounders" of spirits, and it may be well for us to inquire whether, in any wise, druggists fall under this denomination. A *compounder* is defined "to mean and include any person, who, by himself or his agent, compounds or mixes for sale, by wholesale, any of the articles enumerated in the first schedule to the Act, or which may be added to such schedule by order of the Governor in Council. *Compounded spirits* are held to include all articles containing Canadian or other spirits, and which are enumerated in the first schedule, or which may be added thereto. This schedule includes the following liquids: "Imitations of British or foreign wines, brandy, rum, gin, old tom, Geneva schnapps, British or foreign whiskey, and *bitter liqueurs and cordials containing alcohol.*"

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It is evident that if a druggist holds strictly to his own legitimate business he cannot certainly be called a compounder, but we know that there are some who undoubtedly belong to the category. The articles which we have marked in italic embrace a few compounds of the character of which there can be no doubt, and some which are not so clearly placed. This matter will no doubt come up before the Act comes into force, and we shall then be in a better position to discuss it.

The remaining sections of the Act relate to certain amendments to the revenue laws at present in force; and to the adulteration of food, drink, and drugs. These terms are separately defined, and we are told that "*food* means and includes every article used as food in the state in which it is offered for sale, or that is used in the preparation of food by admixture therewith, either before, during, or after cooking. *Drink* means and includes any liquid used as a beverage, and any article used in or for the preparation or partial preparation of any beverage. *Drug* means and includes all articles used for curative or medicinal purposes." These definitions are sufficiently full and explicit and will much facilitate the working of the Act.

As to what constitutes an adulteration we learn that it is held to be the admixture of any deleterious ingredient, or any material or or ingredient of less value than is understood or implied by the name under which the article is offered for sale. The adulteration of drink is especially mentioned, and in a schedule appended to the Act certain deleterious articles are enumerated. These embrace cocculus indicus, common salt, copperas, opium, Indian hemp, strychnine, darnel, sud, extract of logwood, salts of zinc, lead, or alum, and any extract of compound of any of these. Any person who shall expose or offer for sale, or sell, any article of drink containing any of the above ingredients, knowing such to be the case; or who shall be guilty of such admixture; and any compounder who has upon his premises any of the above articles, for the possession of which he is not satisfactorily able to account, shall, for the first offence, be liable to a penalty of one hundred dollars, and, for the second offence, two hundred dollars. How this portion of the Act can be practically carried out, and what the effect of prohibiting the use of the above articles will amount to we shall reserve for further discussion.

The adulteration of food and drugs is attended with similar

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penalties, and the detection of such adulteration is provided for by the appointment of analysts. Officers and inspectors of inland revenue, or officers specially created under the Act, are to act as inspectors, and may at any time enter the premises of persons keeping food, drink, or drugs for sale, and demand samples of such commodities. These must be furnished, but the person furnishing such samples may have the privilege of retaining, under seal, a portion of such samples. This will afford means to verify results of analysis or settle disputes regarding any disagreement arising from this cause. Persons from whom samples have been obtained have also the privilege of attending when the sample taken by the inspector is opened by the analyst, and there are also other conditions and restrictions to ensure the just working of the system. In case the analyst detects adulteration the fine above stated may be imposed, together with the costs of analysis.

A useful feature, which will be the means of collecting much valuable information relating to adulteration, is that requiring analysts to make a quarterly report, to the Department of Inland Revenue, of all analyses made during the period, and of the nature and kind of all adulteration detected. This report will be printed and appended to the annual report of the Department.

Editorial Summary.

Preparation of Lunar Caustic.—Mr. E. Bouilhon, (*Repert. de Pharm.* in *Phar. Jour. and Trans.*,) alludes to the imperfections of caustic crayons, their varying color, composition and brittleness. Some manufacturers add nitrate of potassium, as well for the purpose of reducing cost as of producing a whiter caustic. In other cases, chloride of silver is present, either as an accidental impurity, or added for the sake of improving the color and toughness. Such crayons are quickly darkened by light. Again, a basic nitrate, or nitrite of silver, originating in the overheating of the fused salt, is often present. Strangely enough, the Codex, losing sight of the fact that the nitrate is easily reduced by organic matter, especially under the influence of heat, recommends the greasing of the moulds, and also directs the salt to be kept for some time in a state of fusion. The author rightly concludes that none of these expedients need be

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adopted in order to produce a presentable and reliable article; and that the unchanged nitrate yields the best caustic when pure and unadulterated. In order to produce crayons of this character, he recommends a process for producing the nitrate direct from the metal; but in this there is nothing new or worthy of remark. The only improvement on other published methods relates to the operation of fusion. It is recommended that when about three-fourths of the nitrate is melted the heat should be withdrawn, or rather the liquid portion should be run into the moulds, which should be perfectly clean, and, preferably, of copper. In this way crayons are produced of a dead-white color and of irreproachable solidity.

Mixture for Tapeworm.—A writer in the *Druggists' Circular* recommends, for the expulsion of tapeworm, the following mixture:

Bark of pomegranate root, ½ ounce,
Pumpkin-seed, 1 ounce,
Ethereal extract of male fern, 1 drachm,
Powdered egrot, ½ drachm,
Powdered gum arabic, 2 drachms,
Croton oil, 2 drops.

The pomegranate-bark and pumpkin-seed are thoroughly bruised, and, with the egrot, boiled in eight ounces of water for fifteen minutes, then strained through a coarse cloth. The croton oil is first well rubbed up with the acacia and extract of male fern, and then formed into an emulsion with the decoction. The worm will generally be expelled alive and entire within two or three hours after the exhibition of the dose. As far as preliminary provisions are concerned it will be found advantageous for the patient to abstain from breakfast on the morning the mixture is taken, and also to take a full dose of sal Rochelle the preceding evening.

Chloral in Headache.—A writer in the *Atlanta Medical and Surgical Journal* recommends the local application of chloral as a remedy in ordinary nervous headache. Fifteen or twenty grains of chloral are dissolved in a very small quantity of water. The solution is applied to the seat of pain, by the tip of the finger, and gentle rubbing of the skin is resorted to until redness of the skin is apparent. The application need not extend over a greater surface than that which might be covered by a silver dollar. Slight desquamation of the epidermis usually results.

Proportion of Alcohol in various commercial Bitters.—The State Assayer of Rhode Island has been making an examination of the so-called bitters found in the American market, and of

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thirty-four samples, finds the amount of alcohol to run from 6.36 to 43.20 per cent. The following list contains an enumeration of those bitters which are best known in Canada:

	PER CENT.
Hostetter's Stomach Bitters	43.20
Drake's Plantation Bitters	30.24
Rush's Bitters	34.30
Peruvian Bitters	22.40
Hoffland's German Bitters	20.85
Oxygenated Bitters	19.23
California Wine Bitters	18.20
Walker's Vinegar Bitters	7 50

Composition of the white coating of Bleached Ginger.—Mr. T. Garside, (*Pharm. Jour. and Trans.*) having examined five samples of bleached ginger, concludes that the commonly received opinion of such ginger being bleached by chlorine or the fumes of sulphur is incorrect. The white appearance on two of the specimens examined was produced by a coating of plaster of paris; on the remaining three, by a powder consisting of calcium carbonate, 87.12; calcium sulphate, 7.90, and calcium chloride, 4.98 per cent.; about the composition of ordinary whitewash. This earthy matter amounted to 2.33 per cent. of the weight ofthe ginger; an adulteration worthy of serious consideration.

Practical Formulæ

French Putty.—Discovered by Reuben, of Paris, is prepared as follows: 7 lb of linseed oil are boiled for about two hours with 4 lb of brown umber, after which 2 oz of finely cut wax are added; the mixture is removed from the fire, and 5½ lb prepared chalk and 11 lb of white lead are well incorporated. This putty is said to be very durable, and can be used on frames without oiling them previously. *American Journal of Pharmacy.*

How to Deodorize Cocoa-nut Oil.—The following has been recommended:—To one pound of the oil add one ounce of freshly-calcined bone-black and half an ounce of calcined magnesia. Let it stand in a warm place, with frequent agitation, during three days. Allow it to settle down or filter through paper in a funnel provided with a double jacket holding warm water. During the maceration with bone-black, the oil must be kept just warm enough to remain in the liquid state.—*Druggists' Circular.*

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Varieties.

PETROLEUM FOR BURNING BRICK.—A burner is in use, in Canada, by which residuum or crude petroleum is used instead of coal or wood in brick kilns. By a simple contrivance the nozzle of the burner is made to throw the flame directly downward at the first firing, and after burning the head (as it is termed) this nozzle is replaced by a straight one, the change being effected in a few moments. The flame is thereby thrown into the arch any required distance, burning the whole kiln from one end, and doing it in much less time than by the old method, and with perfect success as regards the quality of the burning. One man, by this process, will be able to do as much firing as a dozen with the old, as he can attend to as many arches as may be set going in one yard, and by this means save a large item in labour. The tar or petroleum consumed will not cost as much as wood at $3.50 per cord.—*Jour. of App. Chem.*

TANNIC ACID FROM SUMAC.—Whatever doubts may have existed as to the identity of the tannic acid in Sicilian sumac and that in gall nuts have been removed by the experiments of Julius Lowe. His experiments prove that tannin can be profitably prepared from the Sicilian sumac, which contains as much, if not more, of this material than gall nuts. To ascertain how much of the tanning substance is contained in sumac, which is now so much used for that purpose, the usual method of titration is employed. The tannin is extracted from the sumac by means of water, the solution filtered through flannel, and the tannin taken up with acetic ether. From this solution the ether may be distilled off and employed a number of times for the same purpose, so that the cost is not increased by the use of this solvent. Acetic ether is easier to use, and less dangerous than the more volatile and inflammable ether ordinarily employed.—*Jour. of App. Chem.*

A NEW USE FOR NITRIC OXIDE.—The most important use to which nitric oxide is now applied is the oxidation of sulphurous acid and its conversion into sulphuric acid. The ease with which it takes up oxygen from the air and gives it up again to other substances is likely to find other important uses in the arts. Kuhlmann has employed it quite successfully for converting the protoxide of manganese, formed by precipitating the chlorine residues with lime, into the binoxide, and thus rendering it capable of use for an indefinite number of times in the manufacture of chlorine. If nitric oxide mixed with a sufficient quantity of air be passed over the protoxide of manganese, the latter is converted into the nitrate of manganese. On heating the nitrate of manganese to 200° C. it is entirely decomposed, giving off nitric oxide, while binoxide of manganese remains behind.

$$Mn\,NO_3 = Mn\,O_2 + NO.$$

The nitric oxide involved in this part of the process is mixed with air, and employed to convert a fresh quantity of the protoxide into the nitrate, which is again decomposed by a temperature of 200°, so that the process is continuous, and theoretically unending. Kuhlmann is now engaged in overcoming some practical difficulties in the way of applying it on a large scale.—*Jour. of App. Chem.*

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DRUGS, MEDICINES, &c.	$ c.	$ c.
Acid, Acetic, fort	0 15	@ 0 16
Benzoic, pure	0 22	0 27
Citric	1 40	1 50
Muriatic	0 05	0 06
Nitric	0 11½	0 15
Oxalic	0 23	0 24
Sulphuric	0 03¾	0 07
Tartaric, pulv	0 50	0 50
Ammon, carb. casks	0 23	0 24
" jars	0 23	0 24
Liquor, 880	0 25	0 28
Muriate	0 14	0 15
Nitrate	0 45	0 60
Æther, Acetic	0 45	0 50
Nitrous	0 40	0 42
Sulphuric	0 50	0 50
Antim. Crude, pulv	0 15	0 17
Tart "	0 55	0 65
Alcohol, 95 per ct.....Cash	1 91	2 05
Arrowroot, Jamaica	0 18	0 22
Bermuda	0 50	0 65
Alum	0 02¾	0 03½
Balsam, Canada	0 50	0 50
Copaiba	0 95	1 00
Peru	3 75	4 00
Tolu	1 15	1 20
Bark, Bayberry, pulv	0 20	0 22
Canella	0 17	0 20
Peruvian, yel. pulv	0 42	0 50
" red "	2 10	2 20
Slippery Elm, g. b	0 15	0 20
" flour, packets	0 28	0 32
Sassafras	0 15	0 18
Berries, Cubebs, ground	0 20	0 25
Juniper	0 06	0 10
Beans, Tonquin	0 62	1 10
Vanilla	30 00	30 00
Bismuth, Alb	2 90	3 00
Carb.	3 10	3 25
Camphor, Crude	0 38	0 40
Refined	0 45	0 50
Cantharides	2 40	2 50
Powdered	2 60	2 70
Charcoal, Animal	0 04	0 06
Wood, powdered	0 10	0 15
Chiretta	0 23	0 30
Chloroform	1 00	1 65
Cochineal, S. G	0 75	0 90
Black	1 10	1 20
Colocynth, pulv	0 60	0 65
Collodion	0 70	0 80
Elaterium.....oz	3 20	4 00
Ergot	0 32	0 45
Extract Belladonna	1 50	1 60
Colocynth, Co	1 25	1 75
Gentian	0 50	0 60
Hemlock, Ang	0 00	0 95
Henbane, "	1 50	1 60
Jalap	5 00	5 50
Mandrake	1 75	2 00
Nux Vomic.....oz	0 40	0 50
Opium.....oz	1 50	
Rhubarb	5 00	5 50
Sarsap. Hon. Co	1 00	1 20
" Jam. Co	3 50	4 00
Taraxacum, Ang	0 70	0 80
Flowers, Arnica	0 17	0 25
Chamomile	0 32	0 40
Gum, Aloes, Barb. extra	0 70	0 80
" " good	0 40	0 50
" Cape	0 16	0 20
" " powdered	0 20	0 30
Socot	0 50	1 35
" " pulv	1 00	0 00
Arabic, White	0 70	0 75
" powdered	0 60	0 75
" sorts	0 24	0 30
" " powdered	0 42	0 50
" com. Gedda	0 13	0 16
Assafœtida	0 40	0 42
British or Dextrine	0 13	0 15
Benzoin	0 35	0 75
Catechu	0 12	0 15
" powdered	0 25	0 30
Euphorb, pulv	0 35	0 40
Gamboge	1 40	1 50
Guaiacum	0 50	1 00
Myrrh	0 50	0 85

DRUGS, MEDICINES, &c.—*Contd.*	$ c.	$ c.
Sang Dracon	0 60	0 70
Scammony, powdered	6 00	6 50
" Virg. "	14 50	—
Shellac, Orange	0 80	0 85
Gum, Shellac, liver	0 70	0 75
Storax	0 40	0 45
Tragacanth, flake	1 10	1 75
" common	0 53	0 65
Galls	0 22	0 30
Gelatine, Cox's 6d	1 15	1 20
Glycerine, common	0 25	0 30
Vienna	0 29	0 30
Prices	0 60	0 75
Honey, Canada, best	0 15	0 16
Lower Canada	0 14	0 16
Iron, Carb. Precip	0 20	0 25
" Sacchar	0 40	0 55
Citrate Ammon	1 75	1 80
" & Quinine, oz	0 55	0 58
" & Strychine	0 20	0 25
Sulphate, pure	0 08	0 10
Iodine, good	6 25	7 50
Resublimed	7 25	7 50
Jalapin	1 25	1 50
Kreosote	2 40	2 50
Leaves, Buchu	0 22	0 32
Foxglove	0 25	0 30
Henbane	0 35	0 40
Senna, Alex	0 27	0 60
" E. I.	0 14	0 20
" Tinnevilly	0 20	0 30
Uva Ursi	0 15	0 17
Lime, Carbolate.....brl	5 50	—
Chloride	0 05	0 06
Sulphate	0 08	0 12
Lead, Acetate	0 15	0 16½
Leptandrin.....oz.	0 60	—
Liq. Bismuth	0 50	0 75
Lye, Concentrated	1 75	2 00
Liquorice, Solazzi	0 50	0 55
Cassano	0 23	0 40
Other brands	0 14	0 25
Liquorice, Refined	0 35	0 45
Magnesia, Carb..... 1 oz.	0 20	0 25
" ..... 4 oz.	0 17	0 20
Calcined	0 65	0 75
Citrate.....gran.	0 63	0 75
Mercury	1 85	1 90
Bichlor	1 70	1 75
Chloride	2 00	2 10
C. Chalk	0 75	80
Nit. Oxyd	2 10	2 15
Morphia Acet	5 60	5 65
Mur.	5 60	5 65
Sulph	5 70	5 75
Musk, pure grain.....oz	25 00	—
Canton	0 60	1 20
Oil, Amonds, sweet	0 40	0 45
" bitter	14 00	15 00
Aniseed	4 00	4 25
Bergamot, super	7 25	7 50
Caraway	3 20	3 50
Cassia	2 25	2 50
Castor, E. I	0 16	0 18
Crystal	0 22	0 25
Italian	0 26	0 28
Citronella	1 15	1 25
Cloves, Ang	3 00	3 00
Cod Liver	1 05	1 50
Croton	1 75	2 00
Juniper Wood	0 80	1 00
Berries	2 75	3 00
Lavand, Ang.....oz.	0 00	1 00
Exotic	1 40	1 60
Lemon, super	4 50	4 75
ord	3 20	3 40
Orange	3 00	3 25
Origanum	0 65	0 75
Peppermint Ang	15 00	16 00
" Amer	5 00	5 50
Rose, Virgin	8 50	8 75
" good	6 80	7 00
Sassafras	0 75	1 90
Wintergreen	6 00	6 50
Wormwood, pure	4 00	6 00
Ointment, blue	1 30	1 50
Opium, Turkey	10 50	11 00
pulv	00 00	12 00

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	$ c.	$ c
Drugs, Medicines, &c.—*Cont'd*		
Orange Peel, opt.	0 30	0 36
" good	0 12½	0 20
Pill, Blue, Mass	1 30	1 40
Potash, Bi.chrom	0 18	0 20
Bi-tart	0 33	0 35
Carbonate	0 14	0 20
Chlorate	0 45	0 50
Nitrate	9 00	10 00
Potassium, Bromide	1 00	1 10
Cyanide	0 60	0 5
Iodide	5 75	6 25
Sulphuret	0 25	0 35
Pepsin, Boudault's...oz	1 40	—
Houghton's..... doz.	8 00	9 00
Morson's.....oz.	0 85	1 10
Phosphorous	0 95	1 00
Podophyllin	0 50	0 60
Quinine, Pelletier's	—	2 45
Howard's	2 50	—
" 100 oz. case.	2 55	—
" 25 oz. tin..	2 53	—
Root, Colombo	0 13	0 20
Curcuma, grd	0 12½	0 17
Dandelion	0 17	0 20
Elecampane	0 16	0 17
Gentian	0 08	0 10
" pulv	0 15	0 20
Hellebore, pulv	0 17	0 20
Ipecac, "	1 50	1 60
Jalap, Vera Cruz	90	1 15
" Tampico	0 70	1 00
Liquorice, select	0 12	0 13
" powdered	0 15	0 20
Mandrake "	0 20	0 25
Orris, "	0 20	0 25
Rhubarb, Turkey	2 50	2 75
" E. I	1 10	1 20
" " pulv	1 20	1 30
" " 2nd	0 90	1 00
" French	0 75	—
Sarsap., Hond	0 50	0 52
" Jam	0 88	0 90
Squills	0 10	0 15½
Senega	1 00	1 10
Spigelia	0 25	0 30
Sal., Epsom	2 25	3 00
Rochelle	0 32	0 35
Soda	0 02½	0 03
Seed Anise	0 13	0 16
" Canary	0 05	0 06
Cardamon	2 25	2 50
Fe ugreek, g'd	0 09	0 10
Hemp	0 06½	—
Mustard, white	0 14	0 16
Saffron, American	0 75	0 85
Spanish	12 00	13 00
Santonine	7 50	8 00
Sago	0 08	0 09
Silver, Nitrate.....Cash	14 85	16 50
Soap Castile, mottled	0 11	0 14
Soda Ash	0 03⅜	0 05
Bicarb. Newcastle	6 20	6 50
" Howard's	0 14	0 16
Caustic.	0 05½	0 05⅝
Spirits Ammon., arom	0 35	0 35
Strychnine, Crystals	2 25	2 50
Sulphur. Precip	0 10	0 12½
Sublimed	0 03½	0 05
Roll	0 03	0 04½
Vinegar, Wine, pure	0 55	0 60
Verdigris	0 35	0 40
Wax, White, pure	0 75	0 80
Zinc. Chloride.....oz	0 10	0 15
Sulphate, pure	0 10	0 15
" common	0 06	0 10
Dyestuffs.		
Annatto	0 35 @	0 60
Aniline, Magenta, cryst	2 50	2 80
" liquid	2 00	—
Argols, ground	0 15	0 25
Blue Vitrol, pure	0 09½	0 10
Camwood	0 06	0 09
Copperas, Green	0 01½	0 02½
Cudbear	0 16	0 25
Fustic, Cuban	0 02½	0 04
Indigo, Bengal	2 40	2 50
Madras	0 0	0 95
Extract	0 30	0 35

Dyestuffs—*Continued.*		
Japonica	0 07⅜	0 08
Lacdye, powdered	0 33	0 38
Logwood	0 02½	0 03
Logwood, Camp	0 02½	0 3½
Extract	0 10	0 14
" 1 lb. bxs	0 13	—
" ½ lb. "	0 14	—
Madder, best Dutch	0 12	0 14
2nd quality	0 11	0 13
Quercitron	0 03	0 05
Sumac	0 06	0 08
Tin, Muriate	0 10½	0 12½
Redwood	0 05	0 06
Spices.		
Allspice	0 11½@	0 12
Cassia	0 35	0 38
Cloves	0 46	0 48
Cayenne	0 28	0 30
Ginger, E. I	0 19	0 20
Jam	0 20	0 30
Mace	1 65	1 75
Mustard, com	0 20	0 25
Nutmegs	1 15	1 20
Pepper, Black	0 22½	0 23
White	0 35	0 36
Paints, Dry.		
Black, Lamp, com	0 07 @	0 08
" refined	0 25	0 30
Blue, Celestial	0 08	0 12
Prussian	0 65	0 75
Brown, Vandyke	0 10	0 12½
Chalk, White	0 01	0 01½
Green, Brunswick	0 07	0 10
Chrome	0 16	0 25
Paris	0 30	0 35
Magnesia	0 20	0 25
Litharge	0 07	0 09
Pink, Rose	0 12½	0 15
Red Lead	0 07¼	0 08
Venetian	0 02½	0 03½
Sienna, B. & G	0 07	0 08
Umber	0 07	0 10
Vermillion, English	1 85	1 90
American	0 25	0 35
Whiting	0 85	0 90
White Lead, dry, gen	0 08½	0 09
" " No. 1	0 07	0 08
" " No. 2	0 05	0 07
Yellow Chrome	0 12½	0 35
" Ochre	0 02½	0 03½
Zinc White, Star	0 10	0 12
Colors, in oil.		
Blue Paint	0 12 @	0 15
Fire Proof Paint	0 06	0 08
Green, Paris	0 30	0 37½
Red, Venetian	0 07	0 10
Patent Dryers, 1 lb tins	0 11	0 12
Putty	0 03¾	0 04½
Yellow Ochre	0 08	0 12
White Lead, gen. 25 lb. tins	2 50	—
" No. 1	2 25	—
" No, 2	2 00	—
" No. 3	1 75	—
" com	1 30	—
White Zinc, Snow	2 75	3 25
Naval Stores.		
Black Pitch	4 25 @	4 50
Rosin, Strained	4 50	—
Clear, pale	5 75	7 25
Spirits Turpentine	0 57	0 60
Tar Wood	4 25	4 50
Oils.		
Cod	0 63 @	0 70
Lard, extra	0 90	0 95
No. 1	0 85	0 87
No. 2	0 80	0 85
Linseed, Raw	0 72½	0 75
Boiled	0 77½	0 80
Olive, Common	1 05	1 10
Salad	1 80	2 30
" Pints, cases	4 20	4 40
" Quarts	3 25	3 50
Seal Oil, Pale	0 72	0 75
Straw	0 68	0 70
Sesame Salad	1 30	1 35
Sperm, genuine	2 35	2 40
Whale refined	70 0	0 75

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Aberdein, Dr. W., Chippewa.
Adamson, Mrs. E., Oil Springs.
Allison, S. E., Port Perry.
Ansley, W. W., Port Dover.
Austin, Jonath., Simcoe.
Aylsworth, Jas., Tamworth.
Atkinson, W. T., Oshawa.
Bache, J. H., Brantford.
Bain, T. B., Tilsonburg.
Bain, D. J., Paisley.
Baines, Jas., Prescott.
Banks, J. H., Weston.
Barclay, M. F., Wardsville.
Barr, Jno. A., Hamilton.
Bauld, E. H., Beaverton.
Beeton, J. E., St. Catharines.
Beeton, W. B., St. Catharines.
Bell, A. W., Carleton Place.
Bell, Jos., Jr. Meaford.
Berry, G. W., Lucknow.
Berry, W. L., Lucknow.
Bickle, T., Hamilton.
Bickle, J. W., Hamilton.
Birks, Geo., Prescott.
Bond, Jno., Goderich.
Bond, J. R., Schomberg.
Borland, E. B., Fenelon Falls.
Bosworth, N. A., Stratford.
Boulton, H. C., Exeter.
Bower, A. P., Lakefield.
Bower, Joshua, Perth.
Bowman, W. H., Berlin.
Boyle, Arthur, St. Catharines.
Bray, Wm., Petrolia.
Bray, W. T., Wingham.
Breakenridge, D. A., Morrisburg.
Brendon, F., Brantford.
Brent, Chas., Port Hope.
Brett, R. G., Watford.
Brierly, R., Hamilton.
Britton, C., Lindsay.
Brydon, Wm., Toronto.
Brodie, Jas. A., Toronto.
Brook, J. W., St. Catharines.
Browne, Dr. Jas., Ottawa.
Browne, Jno. E., Thorold.
Burgar, J. H., Welland.
Burnell, C. S., Belleville.
Butterfield, J. A., Norwood.
Byrne, Jas., Whitby.
Bywater, R. E., Colborne.
Caldwell, O. B., Ingersol.
Callard, Jno., Sparta.
Cameron, D., Cayuga.
Campbell, A., London.
Campbell, Jno., Shannonville.
Canniff, B. W., Belleville.
Carpenter, E. R., Collingwood.
Carr, Thos., Thornhill.
Carroll, F. Clifford.
Carters, Henry, Bond Head.
Case, John, Toronto.
Casselman, C. T., Winchester.
Caton, Allen, Newburg.
Cattle, Geo., Goderich.
Chandler, E., Belleville.
Chandler, E., Jr. Strathroy.
Chapman, C. A., Picton.
Chapman, Jno., Chatham.
Carson, J. E., Listowel.
Christie, A., Ottawa.
Chidley, Geo., Clinton.
Clarke, Jno. A., Guelph.
Clarke, Sibree, Dresden.
Coad, Jas., Woodstock.
Combe, Jas. H., Clinton.
Coombs, R. McL., Perth.
Coombs, Jno. S., Perth.
Coombs, Jos., Smiths Falls.
Corbett, R., Rosemont.
Corbett, W. J., Rosemont.
Cormack, J. G., Pembroke.
Coulter, Wm. Peterboro.
Cox, Wm. H., Toronto.
Craig, J. W., Brantford.
Cull, J. Walker, Mitchell.
Cullingford, Jno., Cobourg.
Cumming, Geo., Rosemont.
Curtis, H. H., Simcoe.
Dacier, C. O., Ottawa.
Dale, Jno. B., Wyoming.
Dale, W. H., Petrolia.
Davey, N. W., Pakenham.
Davids, Jos., Toronto.
Davidson, F. R., Ottawa.
Davidson, H., Walkerton.
Dawes, Jno., Brooklin.
Dawson, C., Warkworth.
Deacon, Jos., Bradford.
Denham, Geo., Petrolia.

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Dilworth, Jos., Toronto.
Dumbrille, J., Maitland.
Dutton, J. W., Stratford.
Dyas, J. J., London.
Dyas, W. J., Strathroy.
Eastman, D. W., Smithville.
Eastwood, Alf., Schomberg.
Eakins, J. M., Princeton.
Eby, M. F., Normanton.
Eccles, Danl., Parkhill.
Egar, W. G., Millpoint.
Eldon, R., Kintore.
Elliot, Wm., Toronto.
Elliot, R. W., Toronto.
Ellis, F., Brantford.
Everest, G. M., Arkona.
Elliott, Henry, Hampton.
Farrell, Jno., Lucan
Fead, S. G. M., Cannington.
Fitch, J. D., Grimsby.
Fitzgerald, J. W,, Fenelon Falls.
Foster, W. O., Simcoe.
Fothergill, R., Newcastle.
Frank, Jno., Toronto.
Frood, Thos., Clifford.
Fullarton, W. B., Napanee.
Gamsby, L. A., Orono.
Garlick, J. A., Millbank.
Garvey, J. M., Delhi.
Geary, T. J., Sarnia.
Gilbert, Wm., Mansfield.
Gissing, A. W., Princeton.
Gordon, Miss M., Port Colborne.
Gordon, W. D., Kingston.
Graham, R., Enterprise.
Grandy, W. H., Omemee.
Grant, Jas. R., Brussels.
Greaves, Jos., Collingwood.
Geen, Alb. L., Belleville.
Green, W. H., Walkerton.
Griffis, W. C., Colborne.
Greenwood, W.W., St. Catharines
Gregory, E., Lindsay.
Gundry, L. J., Aylmer.
Hacking, J. A., Listowel.
Hall, R. H., Rondeau.
Hallamore, J., Toronto.
Halson, R., Wellington Square.
Hamilton, A., Hamilton.
Harding, A. O., Prescott.
Harding, J. B., Brockville.
Harkness, G. W , London.
Harper, Henry, Cookstown.
Harvey, E., Guelph.
Hawkes, Jas. Brockville,
Henderson, Dr., Ailsa Craig.
Hewitt, Wm. Vittoria.
Hewson, G. H., Smithville.
Hey, Thos., Ailsa Craig.
Higginbotham,, J., Bowmanville.
Hilborn, W. R., Hawksville.
Hildreth, A. R., Paisley.
Hodgetts, Geo., Toronto.
Hodgson, R. H., Brampton.
Holden, J. F., Alton.
Holden, S., Markham.
Holland, J. H., Collingwood.
Halliday, D., Perth.
Hooper, C. E., Toronto.
Hopkins, J. F., Dundas.
Howarth, J. L , Toronto.
Huffman, J. C., Napanee.
Huffman, T. A., Napanee.
Hunter, Wm., Toronto.
Howard, S. W., Hagersville.
Hutton, Dr. J., Forest.
Hickson, Ed., Seaforth.
Hampton, H. M., Toronto.
Harris, Edwin, Toronto.
Hawley, A. W., Trenton.
Holden, W. J., Strathroy.
Inglis, W. M., Brockville.
Jackes, B.. Toronto.
Jackes, Price, Toronto.
Jackson, T. G., Wingham.
Jaques, H. W., Merrickville.
Jefferis, B. G., Petrolia.
Jennings, Jno., Manotick.
Johnson, A. J., Peterboro.
Jones, C. R., Montreal.
Jordan, F., Goderich.
Jukes, A., St. Catharines.
Johnston, W., Smiths Falls.
Kane, Mrs. M., Amherstburg.
Kelly, P. D., Alliston.
Kelman, Jas., Newmarket.
Kennedy, J., Cobourg.
Kennedy, J. A., Montreal.
Kermott, C. H., Barrie.
Kidd, J. P., Barrie.
Kilborn, H., Newboro.
King, J. G., Kingston.
Knowles, H. A., Toronto.
Kneeshaw, R., Ingersoll.
Lally, T. P., Smithville.
Lamb, J. P., Farmersville.
Lander, J. C., Yorkville.
Lea, J. W., Port Rowan.
Leach, Alf., Millbrook.

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Livingston, W. W., Simcoe.
Livingston, J. jr, Listowel.
Lloyd, W. A , Pembroke.
Love, Jno. A., Stanton.
Love, N. C., Toronto.
Lowe, J., Amherstburg.
Lumsden, R., Seaforth.
Land, Abel, Drummondville.
Lutz, W. H., Galt.
Lyman, B., Toronto.
Lyman, H., Montreal.
Lloyd, Wellington, Stouffville.
Margach, J. L., Duffins Creek.
Matchett, T., Omemee.
Matheson, A., Toronto.
Matthews, E., Waterford.
Meacham, J. B., Dundas.
Meldrum, H., Hillsburg.
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Miller, Hugh, Toronto.
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Mills, Jas., Jarvis.
Mitchell, G., Port Hope.
Mitchell, J, Port Hope.
Mitchell, B. A., London.
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Moore, H. P., Rodney.
Morris, E. P., Bowmanville.
Mundy, Mark, Hamilton.
Munro, L. C., Fergus.
Morrow, G. E., Acton.
Mussen, H., Allanburg.
Massie, Jas. Smiths Falls.
Mackinnon, D., Stratford.
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McBride, J., Port Dover.
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McCallum, F. H., New Hamburg
McCammon, S., Gananoque.
McCarthy, H. F., Ottawa.
McCullough, G. B., Guelph.
McDonell, D., Vankleek Hill.
McKay, Jas., Hastings.
McKee, J., Hamilton.
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McLeod, A., Woodville.
McMahon, I., Clarksburg.
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McKenzie, M. B., Goderich.
McLennan, C., Erin.
McCollum, J. H., Port Burwell.
McKenzie, Alf., Guelph.
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Parker, H., Durham.
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Parker, Mrs. I., Owen Sound.
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Philips, R., Fergus.
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Perry, C. E., Elora.
Parker, Jas., Stirling.
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Roberts, John S., Seaforth.
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Robinson, W. S., Yorkville.
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Rose, D. E., Tamworth.
Rose, H. J., Toronto.

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Slavin, H. B., Orillia.
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Turner, Allen, Jr., Brockville.
Tolen, G., Barrie.
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Urquhart, J., Oakville.
Urquhart, J. F., Paisley.
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Van Felson, C. A., Jr., Oshawa.
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Wade, Jas., Port Stanley.
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Watson, H., Milton.
Watts, W. R., Clinton.
Watts, F. W., Clinton.
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White, James, Woodstock.
Wightman, R., Owen Sound.
Wildren, J., Vienna,
Williams, James, Brockville.
Williams, John, London.
Williams, Jos., London.
Williamson, W., Stayner.
Wilson, Archdale, Hamilton.
Wilson, C. G., Galt.
Wilson, F. C., Bayfield.
Wilson, M. W., Madoc.
Wilson, R., Cobourg.
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Wood, John O., Toronto.
Wood, R. A., Toronto.
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Wright, Jos., Toronto.
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Waugh, G. J., Stratford.
Wade, H., Kingston.
Windlow, John, Bethany.
Wylie, Wm., Ayr.
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Zielinski, J., Kleinburg.
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